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TRAVELS IN GREAT TIBET AND TRADE ROUTES BETWEEN TIBET AND BENGAL.*

Of all the regions which remain to be explored and fully brought to the knowledge of geographers, that of Great Tibet is among the least known and the most important. No account of this region, derived from the personal observation of an actual traveller, has hitherto been submitted to a meeting of the Geographical Society, with the single exception of that of the Pundit who was sent by Colonel Montgomerie to Lhasa in 1865. It is indeed to that distinguished officer that we owe all our recent knowledge of Great Tibet; and one of the main objects of the present paper is to furnish some account of the more recent journeys which have been made in Tibet by Colonel Montgomerie's emissaries. But I am also able to bring to notice the work of two Englishmen who explored portions of Great Tibet many years ago. The results of their labours have remained hidden in forgotten manuscripts until now, and as no European has since followed exactly in their footsteps, and they are consequently still the most recent European explorers of this region, their narratives continue to be as valuable and as interesting as if they had been written this year. The first of these forgotten explorers is Mr. George Bogle, who was sent by Warren Hastings to the court of the Teshu Lama just a century ago. The second is Mr. Thomas Manning, a private traveller who reached Tibet in 1812, and is the only Englishman who has ever visited its capital—Lhasa. Bogle and Manning are the only two Englishmen who have ever crossed the Tsang-po.

It is necessary that I should first define the limits of the region to which the name of Great or Central Tibet applies. Our general knowledge of that country is still derived from the work of Du Halde, and from the old maps of D'Anville published 130 years ago, and based upon the famous survey of the Chinese Empire undertaken in the reign of Kang-hi and commenced in 1708. Tibet was surveyed by two Lamas who had been instructed and trained by Père Regis and other Jesuits at Peking. Their map extended from Sining to the source of the Ganges, and when it was delivered into the hands of the Jesuit missionaries in 1717, it was found sufficiently accurate and consistent to enable them to construct from it a map of Tibet, from which D'Anville compiled those which still form the basis of modern delineations of the country.

But although the survey of Tibet was executed by native Lamas, the country was visited by Jesuit missionaries in the 17th and 18th centuries. In 1661 Fathers Grueber and Dorville set out from Peking, and reached Lhasa after a perilous journey of six months, and they eventually crossed a formidable pass into Nepal, and arrived safely at Agra. It is said also that two other missionaries, named Hippolito Desideri and Manoel Freyre, set out from Goa in 1714, and reached Lhasa two years afterwards. But their narrative, after leaving Ladak, breaks off abruptly. Father Horazio de la Penna, with eleven companions, has, however, a strong claim to be remembered. He went from Peking to Lhasa in about 1717, at the very time when the Lama surveyors were at work, and, after remaining thirty years in Tibet, he died at Patan in Nepal in 1747. The results of his labours contain much historical information. They were published at Rome by Father Georgi in 1762, and include a Tibetan grammar. The work of Georgi is the only source from which we derive some knowledge of the succession of the early kings of Tibet.

It is from these, and less accessible Chinese works, that Klaproth, Csoma de Körös, Hodgson, and Henry Strachey, were enabled to define the limits and political divisions, and to give us a general idea of the topography of Tibet.

This most interesting region consists of the elevated plateau in the rear of the first great chain of the Himalaya, which overhangs the Gangetic Valley; and Central or Great Tibet is that portion which is watered by the Tsang-po, or the Brahmaputra in its upper course, and its tributaries. Tibet is divided into four great provinces; namely Kam or Eastern Tibet, of which we know little or nothing, but which is believed to be cut up into deep gorges by the upper courses of the Yangtsé, the Cambodia, the Salwín, and the Irawadi; Ari, or Western Tibet, which has been pretty thoroughly explored by our surveying parties, and the two provinces of U and Tsang, called Utsang, which form Great Tibet. The latter region is bounded on the west by the Marian-la and the mighty Kailas or Gangdisri mountain overlooking the sources of the Ganges and the Sutlej; on the south by the outer range of the Himalaya facing the Gangetic Valley, and containing the loftiest peaks in the world; and on the north by another lofty range, called by Hodg-

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son the Nyenchhen-thánglá chain, which separates the country of villages and cultivation from the nomadic hordes on the still loftier plateau of lacustrine drainage between that chain and the Kuen-lun. The eastern boundary of UTSANG or Great Tibet is not so clear. It can be ascertained by a scrutiny of the lists of towns given by Klaproth and D'Anville as situated in the provinces of Tsang and U, and of Kam or Eastern Tibet respectively, and by drawing a line of separation between them. Such a line places the eastern boundary of Great Tibet along the river Kenpu or Dibong, and includes the whole course of the Tsang-po or Brahmaputra above the outer Himalaya within it. Great Tibet, or the two provinces of U and Tsang, thus has an extent of about 750 by 250 miles, and is a region the inhabited parts of which are from 10,000 to 12,000 feet above the sea, bounded by lofty ranges to the north and south, with an inner range traversing it, and separating the watershed of the Ganges from that of the Tsang-po. It has thus two systems of drainage. The Tsang-po or Brahmaputra traverses the whole region from west to east, and receives tributaries from the Nyenchhen-thánglá range on the north, and the northern slopes of the Himalayan outer and inner chains on the south. The rivers which rise between the inner and outer ranges either flow, like the Arun (Kosi) and the Lopra-cachu* of D'Anville, through gorges in the outer chain to Bengal, or into lakes between the two chains.

This grand plateau may in some respects be likened to the Collao of Peru, lying between the maritime and eastern cordilleras of the Andes. Both sustain great flocks and herds, and in both a similar ruminant is used as the beasts of burden, the llama in Peru and the sheep in Tibet. In Peru the Lake Titicaca, at 12,000 feet above the sea, is used as a means of communication by a line of steamers; in Tibet the Tsang-po is a fluvial highway for merchants and their goods, also at a height of 12,000 feet above the sea. Tibet and the Collao of Peru alike abound in the precious metals, in salt and borax. But Tibet is more difficult of access. On one side the Collao has the maritime cordillera with passes leading to the Pacific coast, on the other the auriferous range of the Eastern Andes overlooking the rich alluvial plains of the Amazon. Great Tibet is more isolated. To the south the mighty range of the outer Himalayan can only be traversed by passes of extreme difficulty, and which are closed by snow during part of the year; while to the north a still more formidable journey over snow-clad plateaux and through fearful mountain gorges, which occupies several months, awaits the traveller who would pass from Tibet to China.

The people of Great Tibet, and their priestly rulers, have a strong claim upon the attention of European enquirers. It is to Chinese exclusive policy, and not to the Tibetans, that our ignorance of their country is due. In former days the intercourse between Bengal and Tibet was frequent and unchecked. The Tibetans are of Chinese race, and their language is allied to Burmese; but their Buddhist religion, their extensive literature, their written character, and their prevailing modes of thought are all derived from India, and prove that, for centuries, there must have been an uninterrupted ebb and flow of commerce through the now closed passes of the outer Himalayan range. The monasteries in every part of Tibet, even the most inaccessible, with their armies of monks, the innumerable banners and monuments on every pass, all point to ideas which had their origin, and long prevailed, in the valley of the Ganges. The belief which forms the basis of Tibetan polity is of Indian origin too; and the Dalai Lama himself is an incarnation, in a certain sense, of a Hindu prince, the holy and sinless Sakyamuni. More strictly he is the incarnate Bodhisattva, Padmapani, or Avalokitesvara, the heavenly representative of Sakyamuni. The Dalai Lama is the ruler of the province of U, with his capital at Lhasa; but an equally sacred incarnation rules over the province of Tsang, namely, the Teshu Lama, whose capital is at Shigatze, and who resides in the adjacent palace of Teshu-lumpo. The Teshu Lama is an incarnation of the great Tibetan reformer, Tsonkhapa, who flourished in the 14th century. The Tsang-po River has been described as the boundary between the two provinces of the Dalai, and the Teshu Lamas, U being to the north and Tsang to the south. But this is not exactly correct. Bogle mentions Channam-ling, and other towns, north of the Tsang-po, as part of Tsang, while an examination of the lists of towns given by Klaproth and D'Anville shows that several towns reckoned as being within the province of U are south of the great river.

The Lamas say that the intercourse between Bengal and Tibet fell off after the Muhammadan conquests in India; and it was still further interrupted by Chinese interference, and by the turbulent chiefships of Nepal and Bhutan on the outer slopes of the Himalayas. But there was nothing in the state of affairs to prevent a renewal of the old intercourse between Bengal and Tibet, and the establishment of friendly commercial relations, and this was perceived by the great statesman who established and consolidated our Indian empire. Warren Hastings, the first Governor-General, and the only one whose name is a household word among the natives of India, lost no opportunity of extending the influence of the East India Company, and improving the condition of the people under his rule. Not the least important of his measures was the re-establishment of direct intercourse with Tibet, on occasion of the mediation of the Teshu Lama, after the Bhutan war. He resolved to despatch an envoy across the Himalaya, one on whose abilities and discretion he could rely. The great statesman had trained a school of rising administrators, such as Kynynmond Elliot, whose early death in Orissa he so deeply mourned; Clevland, of Bagulpúr, the first to tame the wild Sonthals, and whose name is still remembered among them; George Bogle, and others of equal mark. The choice of Warren Hastings fell upon the young Secretary of the Board of Revenue, George Bogle, who set out for Tibet in company with Dr. Hamilton, an assistant surgeon in the establishment, and an officer of the Teshu Lama, named Paima; and after some detention in Bhutan, the travellers reached Pari-jong. This is the pass at the head of the Chumbi Valley, which divides Bhutan from Tibet, separating the deep and wild gorges, well wooded and fertile, which slope down to the Bengal plains from the bleak plateau of the Tibetan side. In front were the grassy uplands, patched with snow, on which no Englishman had ever before set eyes, and

* Shubanshir, in Assam.

on his right towered the sacred peak of Chumulari, 22,944 feet above the sea. Mr. Bogle, accompanied by Dr. Hamilton, and their Tibetan companion Paima, set out from Pari-jong, and entered Tibet on the 24th of October 1774.

This mission was politically important, and its results were of great geographical value. I think, therefore, that a brief reference to Mr. Bogle's discoveries, and to some of the incidents of his journey can scarcely fail to be interesting.

Four days after leaving Pari, Mr. Bogle discovered two large Alpine lakes called Shamtzo and Calutzo (the first is called Ramtchieu by Turner, the second is not named by him), connected with each other by a stream. He also traced the river flowing out of the Calutzo Lake, and found it to be a tributary of the Brahmaputra, and identical with the Penanang-chu. The name of the second lake, and the direction of the outlet are entirely new geographical facts. The lakes were half frozen over, and well stocked with ducks and other wild fowl. Antelope, *kyang*, and hares were also seen; and it was observed that animal life of all kinds was much more abundant on the bleak uplands of Tibet, than in the wooded gorges of Bhutan.

But here a slight difference occurred between Mr. Bogle and his Tibetan friend, Paima. The British envoy was naturally anxious to have some sport, while the Tibetan looked with horror on acts of bloodshed, especially when actually in sight of the sacred peak of Chumal-ari. Paima strongly objected to shooting, insisting that it was a great crime, that it would give much scandal to the natives, and that it was particularly unlawful within the liberties of Chumal-ari. Mr. Bogle had many long discussions with him on the subject, and tells us that "they were supported on the side of the Buddhist by plain common sense reasons, drawn from his religion and customs; on the part of the British envoy by those fine-spun European arguments which serve rather to perplex than to convince." The latter gained nothing in argument, but at length a compromise was arranged; Mr. Bogle agreed not to shoot until they were fairly out of sight of the holy mountain, and Paima consented to suspend his prohibition in solitary and sequestered places.

The march down the valley of the Penanang-chu, and across the inner chain of the Himalaya to the Tibetan towns of Giantze and Painom has been described by Turner, who followed along the same road a few years afterwards. But Turner never went beyond Teshu-lumpo, while Mr. Bogle crossed the great river Tsang-po near Shigatze, at a point where it is about the width of the Thames at Putney. Having drunk some of its water, washed his hands and feet, and thrown a rupee into it, he embarked in the ferry-boat, of which there were several at this place—well-built flat-bottomed barges, about 25 feet long, consisting of a flooring of thick planks and perpendicular sides about 4 feet high, with an opening at either end, cut down to 2 feet, the whole bound together with bars of iron, and painted white. There was a large oar on each side, pulled by two men, and pushed by another facing them, while a woman helped by hauling on a line made fast to the end of the blade. The steering is managed by a large oar from the stern. The boat carried over twenty-three persons, seven horses, and fourteen asses, besides baggage. The river is not rapid at this place, and great herds of bullocks and flocks of sheep were waiting on each side for a passage. In the summer a lighter kind of boat is used for transporting goods, made of hides with ribs of willow poles, about 8 feet long by 4 broad. Mr. Bogle saw many of them on the bank, keel up, and some, with one end raised, serving as habitations for the boatmen.

The flocks of sheep are used as beasts of burden. Some were coming from the wild and desolate country to the north, laden with salt; others were returning from Giantze with cargoes of barley. Mr. Bogle describes them as large animals with horns extending horizontally. He met flocks of 1200 sheep, each carrying two bags of grain weighing 20 to 25 lbs. They were very obedient to the shepherd's call, and if any of them happened to stray, they were easily brought back by the shepherd's dog.

After crossing the Tsang-po, Mr. Bogle marched up the valley of the Shiang-chu to Namling, and went thence to a small place called Desheripgay, in a gorge a few miles beyond Namling, where the Teshu Lama had resided for two years owing to the prevalence of small-pox at Shigatze.

The Envoy describes the palace, the retinue, and the ceremonies and receptions with graphic minuteness, and he formed a deep and lasting friendship for the sacred person of the Teshu Lama himself, which had a temporarily important influence on British interests, and, if the two men had lived, might have led to permanently good results. The Lama was then about forty years of age. Although endowed with a portion of omniscience and many other divine attributes, his holiness accommodated himself to the weakness of mortals, and endeavoured to make himself loved rather than feared. The expression of his countenance was smiling and good-humoured; his disposition open, candid, and generous. He was extremely merry, and entertaining in conversation, and told a pleasant story with much humour and appropriate action. Mr. Bogle describes the ceremonies of blessing the people, the religious services, and the grand procession of the Desheripgay across the Tsang-po to Teshu-lumpo, when the Lama returned to his capital. He was on most intimate terms of friendship not only with his holiness, but with his young nephews the Pyn Kushus, and his nieces the nuns, with whom he had a great deal of laughing and merriment. During a week in March Mr. Bogle and Dr. Hamilton went to a country seat of the Pyn Kushus on the northern banks of the Tsang-po, whence they obtained a magnificent view of the windings of the river and adjacent mountains, and where their hosts exerted themselves to amuse them by hunting excursions, and to please them by the most cordial hospitality. For the Pyn Kushus made no scruple about shooting when by themselves, and showed Mr. Bogle some good sport with greyhounds, got up matches with bows and matchlocks, and a grand hunt after musk deer. But they had some fear lest they should get into a scrape with the Teshu Lama, if their transgressions were mentioned to him. On the whole nothing could exceed the cordial friendship which sprang up between Mr. Bogle and the Teshu Lama's family.

When the Envoy finally left Teshu-lumpo on his return to Bengal, on the 8th of April 1775, he tells us that "he took his last farewell of the Lama with

an aching heart, having become strongly attached to him for his civilities, his bewitching manners, and his amiable character." Nor was this friendship of a fleeting kind. A correspondence was kept up between the two after Mr. Bogle had returned and was appointed Collector of Rangpúr. The letters from the Teshu Lama were written in the cursive Tibetan character, on paper made from a species of *Daphne* which grows in Nepal and Bhutan. At Rangpúr Mr, Bogle established a fair, with special immunities and advantages for the Tibetan and Bhutanese merchants, and encouraged the intercourse between Tibet and Bengal by every means that his official position gave him, and with the warm support of the Governor-General.

Unfortunately the good Teshu Lama was induced by the Emperor of China to visit Peking, where he died of small-pox, and in the same year, 1782, Mr. Bogle died at Rangpúr. There can be no doubt that the way had been paved for opening the passes into Tibet for traffic and free intercourse; but the premature loss of the negotiators was a death-blow to the bright hopes that were justified by their friendship. Besides his journal and letters, Mr. Bogle drew up valuable reports on the trade of Tibet, on its religion and politics, and on the people. On his death all his papers were packed up and sent to his friends in Scotland, and they have remained untouched and unutilized, in a house in Ayrshire, until the present year. It is true that Warren Hastings did not lose sight of his plans respecting Tibet, for he sent a second embassy, under Captain Turner, in 1783, which reached Teshu-lumpo, following Mr. Bogle's route exactly, but not going beyond that point. The good Lama was then dead, his successor was an infant, and the only result of the mission was the publication of Captain Turner's interesting narrative in 1800.

The death of the Teshu Lama and of Mr. Bogle, and the retirement of the great and enlightened statesman who placed them in communication with each other, were the unfortunate events which put an end to the friendly commercial and diplomatic intercourse between the two countries, and there were evil influences of another kind at work. In Mr. Bogle's conversations with the Teshu Lama there is frequent allusion to the turbulent and aggressive policy of the Gurkha Raja of Nepal, and to the hindrances he was placing in the way of commercial transactions between India and Tibet. At last the Nepalese army invaded the province of Tsang, and plundered the monastery of Teshu-lumpo. This led to intervention on the part of China, and in 1792 a great Chinese army marched into Tibet, utterly defeated the Nepalese at Tengri-maidan, drove them across the Himalayas, and dictated a humiliating peace within 20 miles of Kathmandu. From that time the political influence of China in Great Tibet has been paramount, and, although the internal administration is not interfered with, Chinese troops remain in occupation, and the exclusion of foreigners is enforced by officially watching the Bhutan, Sikkim, and Nepal passes.

It has been said that the watch is so strict as to render it impossible for any Englishman to have passed into Tibet since 1792; but this is not the case, as is proved by the fact that in 1811 Thomas Manning actually reached the city of Lhasa, although it is true that he is the only Englishman who ever succeeded.

The journey of this adventurous traveller has never been described, and the manuscript narrative of his adventures has remained unused, in the hands of his family, ever since. This is the second English traveller to whose labours I desire to call the attention of the meeting.

Thomas Manning was a mathematical tutor at Cambridge, who, after leaving the University, brooded over the mysterious empire of China, until at last he resolved to undertake a voyage to Canton, to study the language, and then to attempt the exploration of the unknown interior. Manning was the friend and correspondent of Charles Lamb, who, during 1803, frequently urged his friend to give up the intended visit to Independent Tartary, as he called it. "The reading of Chaucer has misled you," writes Lamb. "Do not credit his foolish stories about Cambuscan and the ring, and the horse of brass. Believe me there are no such things. 'Tis all the poet's invention. A horse of brass never flew, and a king's daughter never talked with birds. These are all tales. Pray try and cure yourself. Take helebore. Pray to avoid the fiend. Read no books of voyages; they are nothing but lies, and do not go to Independent Tartary."

But all remonstrances were in vain, and, armed with a letter of introduction from Sir Joseph Banks, he sailed for Canton in 1806. After remaining there for some years, studying the language, he proceeded to Calcutta, whence, in September 1811, he set out on his adventurous expedition to Tibet. It would appear that he applied to be employed officially as an envoy, for when the Chinese authorities at Pari hinted at overtures for opening commerce between Tibet and India, he exclaims, "I cannot help feeling what fools the Company are to give me no commission, no authority, no instructions. Fools! to neglect an opportunity they may never have again." Manning was obliged to go as a doctor and in disguise, and of course his difficulties were thus multiplied tenfold. Fortunately he encountered a Chinese general on the frontier at Pari-jong, who was civil to him, and with whom he travelled to Lhasa. From Pari to Giangtze he followed the route taken by Bogle and Turner, but there, instead of turning west to Teshu-lumpo, he crossed the inner range of the Himalayas and reached the famous ring-shaped lake of Palti or Yamdok-chu.

Manning's journal is a personal narrative, containing many incidents of the road, and is specially valuable for its account of Lhasa and of the Dalai Lama; but it contains little geographical information, and, if it had not been for the accounts of Bogle, Turner, and the Pundit of 1865, it would not be easy to make out his route. He skirted along the Yamdok Lake for several days, and gives the Chinese name for it as *Haitu* (little sea); but he does not appear to have known the map of D'Anville, or the peculiar form of the lake with its large island as there delineated. He merely says, "from the opposite margin of the lake rose diminutive mountains in a continued chain." He further says that the water of the lake is said to be very unwholesome, and that it is not used for drinking. Manning crossed the Tsang-po in a large and good ferry-boat, and reached Lhasa without further adventures. The Dalai Lama was then about seven years old, and

the traveller was much impressed by the refined beauty of his holiness. He had the simple and unaffected manners of a well-educated princely child. His face was poetically, even affectingly beautiful, and he was of a gay and cheerful disposition, his mouth perpetually unbending into a graceful smile, which illuminated his whole countenance. Mr. Manning's narrative of his stay at Lhasa is full of interest. He intended to have pressed on to China by way either of Sining or Bhatang, but eventually he was obliged to return to India by the road he came, finally leaving Lhasa on the 19th of April 1812.

Thomas Manning was the last Englishman who ever entered Great Tibet, and only two Europeans have since been at Lhasa, namely, the Abbé Huc and Gabet in 1846. Manning's journey shows that, even after the Chinese campaign of 1792, Europeans could pass from Bengal, through Bhutan, to Lhasa, and that the difficulty of recovering the ground gained by Warren Hastings and Bogle is not insuperable. But since 1812 the work has been confined to enquiries and to visiting the heads of passes, so far as Englishmen are concerned. Csoma de Körös did much valuable service in this way. Mr. Hodgson, during his long residence at Kathmandu, collected a mass of information respecting the geography, ethnology, trade, languages, and literature of Tibet. Captain Pemberton, during his mission to Bhutan, in 1838, and Mr. Eden in 1864 made further additions to our knowledge, which has been still more recently extended by the investigations of Mr. Edgar. But the list of those who have actually reached the head of the passes leading to that forbidden land, which was formerly explored by Bogle, Turner, and Manning, is very brief. First among them are Dr. Hooker, the President of the Royal Society, and the late Dr. Campbell who reached the Donkia Pass (18,500 feet above the sea) and the Kongra-lama Pass, leading from the head of the Tista Valley, in Sikkim, to Tibet, in 1849. Dr. Hooker also visited two passes leading from Nepal. In 1870 Captain Chamer went as far as the Donkia Pass, and in 1871 our associate, Mr. Blanford, accompanied by Captain Elwes, explored the passes leading from Sikkim to the Chumbi Valley, and visited those of Donkia and Kongra-lama leading to Tibet. But no one, since the return of Manning in 1812, has ever reached the Pari-jong, at the head of the Chumbi Valley, the pass most used and most practicable, and by which all the three English explorers entered Tibet.

This total cessation of intercourse, either diplomatic or through English travellers, gives the arrangements of Colonel Montgomerie for exploring Tibet by the agency of natives an importance which can scarcely be over-estimated. Three journeys of Colonel Montgomerie's Great Tibetan emissaries have been completed, and the results worked out, and one, that of the Pundit of 1865, has already been discussed at one of our meetings. This explorer traversed the Nepal pass of Kirong, first sighted the Tsang-po at Tadum Gumpa, and travelled down its valley to Lhasa. At Talla Lobrong, the Pundit found the height of the Tsang-po Valley to be 14,187 feet above the sea; at Shigatze, 11,822, so that there is a rapid descent. From Janglache, an important place on the Tsang-po (or Narichu) mentioned by Bogle, to Shigatze, a distance of 85 miles, merchants and their goods are conveyed down the river in boats. The Pundit also describes the Yamdok-chu (Palti) Lake, visited by Manning, as being 45 miles round, but only two or three wide, because it encircles a large island with hills, rising 2000 or 3000 feet above its surface, as delineated on D'Anville's map. But the Pundit, in contradiction to Manning, says that the water is sweet. The Pundit was at Lhasa from January to April 1866, and fixed its height at 11,500 feet above the sea. On his return he traversed the whole length of the valley of the Tsang-po from Chusuljong (11,300 feet) to Tadun (14,187 feet), and thence 140 miles higher up to the Marian-la Pass, which separates Tsang from Ari, or Great Tibet from Little Tibet.

Colonel Montgomerie's second Tibetan explorer set out in 1871. He crossed a pass in Eastern Nepal, called Tipta-la (Wallangchoom), which had been visited by Dr. Hooker in 1848, reached the Arun River, a tributary of the Kosi, and, after traversing two other passes, discovered a large lake, 20 miles long by 16, called Chuntodong, 14,700 feet above the sea, which he mentions as part of the boundary between Sikkim and Tibet. He then crossed the Lagulung Pass (16,200 feet), over the inner Himalayan range, and reached Shigatze. All this was new work, but the most interesting part of the journey was that from Shigatze back into Nepal, when he crossed the great plain of Tengri-maidan (13,860 feet), where the Nepalese were defeated by the Chinese army in 1792. Thence he followed a trade-route down the Butia Kosi, through a fearful gorge. The road crosses the river no less than fifteen times, three by iron suspension bridges, and eleven by wooden bridges, 24 to 60 paces long. At one place the sides of the gigantic chasm were so close that a bridge of 24 paces would span it. Along the perpendicular wall of rock a path is supported on iron pegs let into the face of the rock. The path is of stone slabs covered with earth, only 18 inches wide, a third of a mile long, and 1500 feet above the roaring torrent. Such are the stupendous difficulties which have been overcome in establishing communication between Nepal and Tibet.

The third explorer, a young Tibetan who had been thoroughly trained for the work, was despatched by Colonel Montgomerie in 1871 to explore the unknown regions north of the Tibetan watershed of the Upper Brahmaputra or Tsang-po. He reached Shigatze in November, and, having purchased fifty sheep to carry the baggage, he crossed the Tsang-po at the point where Mr. Bogle had been ferried over in 1774, and followed Mr. Bogle's route to Namling, on the right bank of the Shiang-chu River. It is interesting to find that, on more than one point the long-forgotten journal of Mr. Bogle furnishes evidence of the accuracy of Colonel Montgomerie's exploring. Thus the Chomgompa, where, according to the explorer, there are 100 nuns, is in the very spot where Bogle stopped with the Teshu Lama, and was visited by nuns.

The explorer advanced north from Namling with the intention of crossing the range called by Hodgson the Nyenchhen-thánglá, and of exploring the great Namcho Lake—the Tengri-nor of D'Anville and the Chinese surveyors. The range was crossed by the Khalamba-la Pass, 17,200 feet above the sea, on the 8th of January 1872. In this mountain range there are numerous hot springs, and two geysers which throw up jets of water to heights exceeding 60 feet.

The water in falling again freezes, and forms pillars of ice up to the full height of the jet. These pillars are 30 feet in circumference, and the water within them, which is thrown up with great noise and violence, stood at a temperature of 183°, the boiling-point at that elevation being only 183° 75'.

The great lake to the north of the mountain range is called Namcho or the "Sky Lake" (Tengri-nor of our maps), and was found to be 50 miles in length by from 16 to 35 miles broad. To the south it is bounded by the Nyenchhen-thánglá range, consisting of snowy peaks flanked by large glaciers, and culminating in the magnificent peak of Nyenchhen-thánglá which is probably more than 25,000 feet above the level of the sea. The range was traced for more than 150 miles, running in a north-easterly direction. To the north of the lake the mountains are not so high. Between the Nyenchhen-thánglá and the Kuen-lun ranges, the lofty plateaux are inhabited by nomadic tribes and bands of robbers; there is no cultivation, and the monasteries are the only fixed habitations. The drainage is into the salt lakes at the lowest levels of this region, the chief of which is the Namcho or Tengri-nor.

The Namcho Lake is considered sacred, and although at such a very great distance from inhabited districts, and at so great an elevation above the sea, there are several permanent Buddhist monasteries on its banks and on islands, which are visited by large numbers of pilgrims. The lake is 15,500 feet above the level of the sea.

The explorer, making the monastery of Dorkia, on the western shore, his head-quarters, made the complete circuit of the lake, and found that it had no outlet. The largest influent is the Nai-chu, a very large stream coming from the east, about 40 paces across near the mouth.

After returning to Dorkia, the explorer once more set out on the 11th of February 1872, and a few days afterwards he made a short excursion to the northward, and discovered another small lake called Balcho. But on the 18th, as the travellers were about o start, a band of sixty armed robbers arrived on horseback, and, in spite of their entreaties, took away all their clothes and provisions, leaving them nothing but the instruments. After much begging, the robbers gave them back a piece of cloth each, with two sheep and two bags of food, but added that if they gave any more trouble they would be killed. The explorer had intended to have made his way from the Namcho Lake to China, but after the robbery he was obliged to march as quickly as possible in the direction of Lhasa, where they were likely to get into inhabited ground soonest. After suffering many privations, the explorer recrossed the mountains by the Dhok-la Pass, and reached Lhasa on the 9th of March, whence, after a long and difficult journey, he returned to the head-quarters of the Great Trigonometrical Survey. His route survey extends over 320 miles of a hitherto entirely unknown country, the chief discoveries being the position, size, and elevation of the great Namcho Lake, and the height and direction of the Nyenchhen-thánglá range.

Thus, through the labours of these three brave and intelligent native explorers, Colonel Montgomerie has furnished us with exact geographical knowledge respecting three of the passes between Nepal and Tibet, of Kirong, the Butia Kosi, and Tipta-la: respecting the whole valley of the Tsang-po from the Marian-la Pass to Chasul-jong; the famous lake of Palti or Yamdok-chu; the position of Lhasa; the great chain forming the northern boundary of the basin of the Upper Brahmaputra; the Namchu Lake, and the interior drainage of Northern Tibet.

This information, combined with the investigations of Hodgson and others, and the personal observations of Bogle, Turner, and Manning, enable us to form a sufficiently accurate idea of the trade-routes leading from India to Great Tibet, up the gorges of Bhutan, Sikkim, and Nepal; and of the physical features of the great plateau in rear of the Himalayan ranges.

Commencing from the east, the first trade-route is through the country of the Towang Bhuteas, who are directly subject to Lhasa, down to Udalgori in Assam. Next we are told by Captain Pemberton, who traversed nearly the whole of Bhutan from east to west in 1838, that there are several passes leading from Tibet into the valley of the Manass, the traders finding their way to Dewangerie at the foot of the hills, and afterwards repairing to a great annual fair at Hazu, opposite Gowhatty in Assam. Then comes the pass of Pari-jong, by which Bogle, Turner, and Manning, found their way from Bhutan into Tibet, and whence Tibetan traders proceeded by Paro and the Baxa Dúar to the fair established by Mr. Bogle at Rangpúr. Here duties were abolished, and buildings were erected for the convenience of the merchants, as well as of their animals and goods, the annual cost to Government being only 70*l*. The Bhutan caravans arrived in February and March at Rangpúr, returning in May and June. They were thus attracted to Rangpúr in great numbers, and the excellent arrangements for the benefit of trade which were made by Mr. Bogle, continued for half a century after his untimely death. But Bogle's arrangements were neglected, and since 1834, when the Government aid was discontinued, the Rangpúr trade has almost entirely ceased. At the Assam fairs gold dust, salt, musk, cowtails, woollens, and horses are exchanged for lac, madder, silk, cloth, and dried fish.

The eastern Sikkim passes leading into the Chumbi Valley, called Jelep-la, Guatin-la, Yak-la, and Cho-la, have recently been examined by Mr. Blanford and Mr. Edgar. They are rarely interrupted by snow for many days, and form an alternative route to that through Bhutan, up the Chumbi Valley to Pari-jong. Further north is the Tankrala Pass, 16,083 feet above the sea, which is the most snowy pass in Sikkim, and the most difficult of access. The Donkia-la, at the head of the eastern branch of the Tista, is 18,466 feet above the sea, and the Kongra-lama Pass, at the head of the western branch, is lower (15,745 feet). They are used by Tibetan herdsmen, who bring their cattle to graze in Sikkim, and by the people in the upper valley of the Tísta branches, the Lachin and Lachung, who twice a year carry wood into Tibet, and bring back loads of salt in return.

The passes from Nepal into Great Tibet follow the tributaries of the Kosi River. The two eastern-most were visited by Dr. Hooker, and one, the Tipta-la, was crossed by Colonel Mongomerie's second explorer. The more westerly pass, by the Butia Kosi, was used by the same explorer on his return to India through Nepal. Its appalling difficulties have already

been alluded to. This is not the route adopted by the Chinese army in 1792, when it advanced upon Kathmandu. The official route is easier, and passes by Kirong to the westward; while merchants are forced to use the more difficult Tipta-la.

Once the intercourse between Bengal and Tibet, by means of these passes, was frequent; and it should certainly be the aim of our rulers to restore it. The Tibetans have always shown themselves desirous to promote such intercourse; and there is certainly no reason why the policy of permitting the passes to be closed through the jealous and selfish exclusiveness of the Chinese Government should be continued. Bogle enumerated the products of Great Tibet as consisting of gold, musk, cowtails, wool, and salt. He said that the genius of the Tibetan Government was favourable to commerce, and that no duties were levied on goods, so that, in his time, many foreign merchants had settled in Tibet. Cashmirian traders had establishments at Lhasa, and all the principal towns of the country; and the Gosains, or trading pilgrims of India, resorted to Tibet in large numbers. Their trade was confined to articles of great value and small bulk, and they travelled without ostentation, and often by paths unfrequented by other merchants. The Kalmuks annually came to pay their devotions to the Lamas, bringing camels laden with the furs and hides of Siberia. The Bhuteas brought the products of Bengal and Assam, while the Chinese had established themselves in great numbers at Lhasa, and carried on a lucrative trade in the teas, porcelains, and brocades of their native country. The merchants of Bengal and Bahar sent their goods by the passes of Nepal and Bhutan. They consisted of broad-cloth, indigo, pearls, coral, chank, spices, tobacco, sugar, white cloths, satins, and the returns were in gold, cowtails, and musk. It was this trade which Warren Hastings did so much to foster, and which Bogle, as collector of Rangpúr, encouraged by the establishment of a fair, and the grant of privileges and immunities.

But all the ground gained by these able administrators in the last century has since been lost. Mr. Edgar, the Deputy Commissioner of Darjíling, tells us a very different story in 1874. Owing to the difficulty and insecurity of the roads, the trade between China and Tibet is now much less considerable than was formerly the case. The chief article is tea, of a coarse description and unpleasant flavour, which sells at Lhasa for eight annas the pound; and so totally have the English neglected the Tibetan markets, that actually Chinese tea is imported through Tibet into the British district of Sikkim for the use of the inhabitants, although tea is grown on the spot. European and Indian goods mainly reach Tibet through Nepal and Ladak, and consist of breadcloth, cottons, coral, pearls, tobacco, opium, and some rich stuffs. The exports from Tibet by these channels are blankets, musk, cowtails, borax, ponies, gold, and silver. There is also some local trade with Sikkim and Bhutan. The great wealth of Tibet lies in its flocks and herds; and enormous quantities of wool and ghee might be imported into Bengal at cheap rates, if a good practicable pass was once opened. The route proposed by Mr. Edgar is by a bridge across the Tísta in Sikkim, and a road thence to the Cho-la range.

My object in the present paper has been to call attention to the valuable results of the journeys of Mr. Bogle and Mr. Manning, which have only now been brought to light, and to give a brief account of the recent labours and discoveries of Colonel Montgomerie's explorers in Great Tibet. These narratives embrace part of a very important subject, namely, that of the re-establishment of friendly commercial intercourse between Tibet and Bengal, a subject which will most assuredly receive attention in the near future. One thing is certain that any steps that may be taken to open diplomatic intercourse with the Teshu and the Dalai Lamas, or to promote trade through the Himalayan passes, cannot fail to add to our stock of geographical knowledge.

CLEMENTS R. MARKHAM.

AUGUSTUS MARGARY.

MR. AUGUSTUS MARGARY, with whose treacherous murder on the borders of Yunnan and Burma our readers are now only too well acquainted, was a son of General Margary, late of the Bombay Engineers. He entered the consular service of China in 1867, as a student interpreter in the Legation at Peking, and was shortly afterwards promoted to the rank of consular assistant, and transferred to one of the open ports on the coast. In 1870 he was appointed to the consulate on the island of Formosa, and after a short period of service at the head office was given charge of the port of Kee-lung, one of the branches of the Formosa consulate, and situated on the north-east coast of the island.

It was here, during the summer of the following year, that Mr. Margary, in company with his friend Mr. John Dodd, distinguished himself by saving the lives of a number of seamen wrecked upon the coast. Three European vessels had been driven on the rocks near the mouth of the harbour during one of those terrible cyclones that almost annually visit the Formosa shore; no boat could communicate with them, but Mr. Margary and Mr. Dodd nevertheless succeeded in swimming off to them with lines, and thus saved the whole, or nearly the whole, of the crews of each vessel in succession. For this gallant action, both were rewarded with the Royal Humane Society's medal and with the "Albert" medal, and it was the feeling of those who from living near the scene knew the circumstances of the case best, that these high distinctions were never more worthily bestowed.

In the autumn of 1874, when the Government of India requested Her Majesty's Minister at Peking to appoint an officer of the consular service to act as Chinese interpreter to the expedition then being organized to explore the trade-routes between Burma and China, Mr. Wade selected Mr. Margary for the service, and in order to prepare the way for the expedition with the officials along the road to be followed, he sent Mr. Margary overland to Burma to meet it, instead of by the sea route *viâ* Singapore, to join it at Rangoon. In this way Mr. Margary had an opportunity of performing one of the most important journeys of modern days, and in doing so of displaying qualifications that stamped him at once as a competent traveller and an able diplomatic officer. He started from Shanghai on his lonely travels towards the end of August 1874, and after ascending the

Yangtsé as high as the Tung-ting Lake, traversed successively the provinces of Hunan, Kwei-chau, and Yunnan, and arrived at Bamó, in Upper Burma, on the 16th of January 1875. He had passed through the scene of the Mian-tse war in Kwei-chau, and of the Muhammadan or Panthay war in Yunnan, and had succeeded everywhere in establishing friendly relations with both the officials and people of the country. That a complicated and deep-laid scheme of treachery was at the time of his arrival in Burma being secretly planned, in quarters with which he was not concerned, for the destruction of the expedition he was to join, he could, of course, know nothing, and that he remained in ignorance of it till the last, detracts not one whit from the honour due to his memory, for what he had already accomplished; whilst having subsequently fallen a victim to—as it were—his own success, is the best proof of the completeness of that success and of the dastardly nature of the plot that had been laid.

This is not the place to give details of his journey, but his journals up to the time of his arrival at the frontier of Burma having been saved, these will in due time be given to the public, and will speak for themselves.

The particulars of his death, or rather his butchery, have not as yet been made clear. On the passage through the Kakhyen Hills from Bamó towards the Chinese frontier, rumours from time to time reached the expeditionary party of danger ahead, when Mr. Margary, full of confidence in his previous successful negotiations, and his thorough knowledge of the language and character of the people, volunteered to go forward alone and ascertain the truth or otherwise of these reports, and endeavour to allay any suspicions that might have gained ground as to the objects of the expedition. When one march ahead of the party, he wrote back to report all clear, and the same evening (19th February) arrived at the Chinese border town of Manwain, where he had previously been hospitably received. The next news of him was an intimation from some Burmese at Manwain, that on the 21st he had been cut down from behind, in a street of that town, by a party of Chinese, that his five attendants had been massacred at the temple in which they lodged, and that the heads of all had been stuck upon the town walls as a public notification of the grandeur of the deed.

That the service to which Mr. Margary belonged has lost a valuable officer, and the Geographical Society one of its most accomplished members, are facts that require no further testimony than a record of his deeds. The loss to his friends and companions of a nature such as his was, is less easily described, and the ordinary platitudes with which the dead are usually honoured in public notices utterly fail to convey the feelings aroused in any one who knew him well. Dramatists and novelists have seldom succeeded in portraying character, combining qualities of manliness and general worth such as those the private friends of Augustus Margary were wont to acknowledge he possessed. He was one of nature's noblemen!

X.

INDIAN FAMINES.—No. II.

THE long-expected minute by the Government of India on the late famine in Bengal, dated the 26th of February 1875, was published by the *Homeward Mail* on the 22nd of March. The minute is, like its subject, shorter than was anticipated. We expected it to begin at the beginning, to tell us of the failure of rain in June, July, and August 1873; of the measures taken all through those months to ascertain the quantity of food in the afflicted districts, and of the steps taken to meet deficiencies then and for the future. Our expectations have been disappointed. The minute refers to reports from the governments of the respective provinces, and to the report from the Government of India, 7th November 1873, telling the Secretary of State that "every available means, at whatever cost," would be used to save life. We all know that the result was a great success. We are now told that "the total net cost will not exceed the sum of 6,500,000*l*."

In the rest of the minute, mixed up with "some general observations for future guidance . . . parts of the history of the past year" are incidentally met with. The resolution of the Government of India of the 7th of November 1873, embraced the chief subjects, and it is shown that the food supply, or stock in hand, had not been sufficiently attended to. "The stock of food in the hands of the people turned out to be larger than was anticipated," while the production of food "was further increased by the unusual quantity of rain" in 1874. "A balance of about 100,000 tons of rice remained after the relief operations had been concluded . . . . The responsibility for this excess rests entirely with the Government of India. If a substantial reserve had not been provided, the success of the relief operations would probably have been attributed rather to good fortune than to foresight." We have already seen that ignorance of the food stock, and an unexpected season, accounted for the balance, but not content with these explanations, a little more is now offered. "In the beginning of September 1874 very great apprehensions were felt that the scarcity would be prolonged. This was only averted by a fall of rain at the very last moment" for sowing the winter crops. "If the rain had not then fallen, the rice in reserve would have been urgently required." Of course it would have been required if other food had not been found at a cheaper rate; but food was found, the seasons aided its production, and the writer of the minute forgot to say that the Government rice was bitter by the exaction of more labour. One action of foresight, one of the seasons, and one of sheer ignorance, produced the balance out of the reserve. The explanation of the foresight is a hasty one.

"The total quantity of grain purchased by the Government amounted to 479,696 tons. . . . . The total quantity of food-grain carried into the distressed districts can hardly have been much less than 1,000,000 tons. It is at all times unsatisfactory to manipulate uncertain figures. We cannot be precise with those before us. The smallest moiety was supplied by Government at a net cost of about 65,000,000 rupees, from other sources the gross expenditure was about 91,770,000 rupees; the difference, 2,677,000, has been, or will be recovered. We have no estimate of the value of the labour

given in return for food, but the greater moiety brought to the famished districts by private trade was a remunerating transaction: the traders fed those who could, Government fed those who could not pay. We hope to see in time some estimate of the value of work done, when some food calculations "and others which are likely to be valuable hereafter are elaborated by the Government of Bengal."

The large exports of food from Upper India, amounting to some "289,000 tons, ... did not greatly affect prices in the producing districts," but the "return of the quantities of food-grains exported by sea from Bengal during the year ending on September the 30th, 1874, shows that the exports were diminished by about one half, owing to the rise in prices." Any rise in the price of food is against the comfort of consumers, so we ask why prices rose in one place more than in the other? The minute gives us the answer. "It was found better to buy by private arrangement with merchants, rather than that the Government should appear openly in the market. The limited experiments, made in the latter direction, showed that the public action of the Government produced an effect upon prices quite out of proportion to the actual amount of the transactions." The times are changed since our merchant forefathers bought and sold to the profit of their company; all was novel in 1874. There were difficulties to contend with, for "Government had for the time to fulfil the functions of both wholesale and retail dealers;" the step retrograde was not satisfactory. In reference to the policy adopted we find, "It is only where there is a great deficiency—and there is also good reason to believe that the traders will be unable to meet the deficiency—that it is right for the state to intervene tor the purpose of supplementing the general food supply. . . During the past year there can be no reasonable doubt that the measure was imperatively required in order to prevent a very great mortality;" the Government hope that "being called on to interfere in this manner with the functions of trade will diminish" with the extension of railways.

The question of carriage requires a brief notice. It is said that the "carts of the country were not available for ordinary traders in any quantities," but "the manner in which grain was conveyed from the railways to the places where it was required has afforded a remarkable instance of the great resources of the country in wheeled conveyance." We have not sufficient data before us to follow this subject out to its legitimate conclusion, but we have enough for the occasion.

Between September and November 1873 some 200,000 tons of food were exported from the vicinity of the distressed districts. The *Times* has said that this was going on at the same moment as the import by Government; there was therefore carriage in the locality for that quantity. During the course of the famine, traders imported more than 500,000 tons; so that they had carriage for that quantity. 1,000,000 tons in all were imported, of which 900,000 tons were used. If the 200,000 tons had not gone, the carriage available to the traders would have sufficed for 700,000 tons in periods scattered over the whole scarce time, and thus the whole 900,000 tons might have been in the distressed districts, without any effort from the Government, except that required for a knowledge of its duties.

In paragraphs 9 and 10 a greater attention is directed to these duties for the future, but how a famine was admitted as a fact without any knowledge of the stock of food in the hands of the people, and without any certainty as to the means of importation of food, is a question for history to unravel. Government accepted the fact, and fed its population: it has accepted the responsibility of a reserve supply of food, but it is not forgotten that Lord Salisbury said in his speech (House of Lords, April 24th, 1874), "We pressed him (the Viceroy) earnestly to increase his stores."—*Mail*, 27th April 1874. They were increased from 420,000 to 479,696. The seasons, the departure of those seeking relief, and the quantity of food poured into the country by the native trade left a considerable balance on hand: the calculation was sound, but events over which the Viceroy had no control altered the circumstances of the case. These events have led us back to the Duke of Argyll, who told the House of Lords "that there is no country in which greater energy is shown by private traders than in India." We again repeat what we have said before, that under proper management these traders are equal to all occasions of local failures of food; every ryot is more or less a supporter of some food dealers, their interests are the same, and it ought to be only in general failures of rain, and a general deficiency of the stocks of food in hand, that a Government like that of India should undertake to feed a nation. There is plenty of waste land in the East, there are people without occupation, there are some to be rewarded for what they have done; are there no enams for them? Leases of land for ten, twenty, or fifty years were once the fashion in India; great jungles were reclaimed, many mouths were fed, and population increased. If idleness is encouraged as it has now been, if confidence is not placed in the food-dealers, who have brought the people into their present condition, there will some day be a sudden decrease either of the ruled or the rulers.

H. P. MALET.

GARDEN OF TRANSMIGRATED SOULS.

THERE is a very curious and graphic passage in the *Travels of Friar Odoric in China* (circa A.D. 1324) regarding a sight that he was taken to see as one of the lions of the great city of Kingszé or Hangchau, and before saying more on the subject it will be well to transcribe the passage:—

"This (Cansay) is the Royal City in which the King of Manzi formerly dwelt. And four of our friars that were in that city had converted a man that was in authority there, in whose house I was entertained. And he said to me one day—'*Atha** (which is to say *Father*), wilt thou come and see the place?' And when I said that I would willingly go, we got into a boat, and went to a certain great monastery of the people of the country [which was called Thebe]. And he called to him one of their monks, saying—'Seest thou here this *Franki Rabban* (which meaneth this Frank monk)? He cometh from where the sun sets, and goeth now to Cambaliech to pray for the life of the great khan. Show him, therefore, prithee, something worth seeing, so that, if he get back to his own country, he may be able to say—I have seen such and such strange things in Cansay!' And the monk replied that he would do so with pleasure.

* No doubt the Turki word *Atha*, Father, used also as a term of respect. Thus Ibn Batuta mentions that Uzbek Khan, of Sarai, attending the Friday prayer, saluted the sherif as "*Atha*" (II., 410).

"So he took two great buckets full of scraps from the table, and opening the door of a certain shrubbery which was there, we went therein. Now, in this shrubbery there is a little hill covered with pleasant trees [and all full of grottoes]. And as we stood there he took a gong, and began to beat upon it, and at the sound, a multitude of animals of divers kinds began to come down from the hills, such as apes, monkeys, and many other animals, having faces like men, to the number of some three thousand, and took up their places round about him in regular ranks. And when they were thus ranged round about him, he put down the vessels before them, and fed them as fast as he was able. And when they had been fed, he began again to beat the gong, and all returned to their retreats. So I, laughing heartily, began to say—'Tell me, prithee, what this meaneth?' And he answered—'These animals be the souls of gentlemen, which we feed in this fashion for the love of God!' 'But,' quoth I, —'No souls be these, but brute beasts of sundry kinds.' And he said—'No, forsooth, they be nought else but the souls of gentlemen. For if a man be noble, his soul entereth the form of one of these noble animals; but the souls of boors enter the forms of baser animals, and dwell therein.' And say what I list against it, nought else would he believe" (*Cathay*, &c., pp. 118—120)

That Odoric did not invent this sight is proved by the incidental remark of another traveller some twenty years later—John Marignolli—who says (*Ibid*, p. 384):—

"There are also certain animals, with countenances almost like a man's, more particularly in the possession of the Queen of Saba, and in the cloister at Campsay, in that most famous monastery where they keep so many monstrous animals, which they believe to be the souls of the departed."

Some time ago I received from a most kind correspondent at Hangchau (the Rev. G. E. Moule, of the Church Mission there), sundry maps and valuable notes in correction and augmentation of my attempt to elucidate Marco Polo's notices of this great city. In one of the maps, which showed the lake (*Si-hu*) to the west of Hangchau, with the numerous convents and other buildings on the hills encompassing it, one locality was marked as the "Lin-yin Convent, with Buddhist monuments of the 10th century," and closely adjoining this the "Fei-lai-foong or Peak of Sculptured Caves." In writing to thank Mr. Moule for his valuable communications, I told Friar Odoric's story, and pointed to this Peak of Sculptured Caves as a possible site for it, with an enquiry.

Mr. Moule has been good enough to take the trouble, in the midst of his serious duties, to answer my questions, and I extract the following passages from his letter. H. YULE.

"EXTRACT FROM THE SI-HU-CHE [*Topography of the Western Lake*], Sect. vi., fol. 19.

"*Apes'-call-Grotto*, at the foot of Fei-lai Hill. This grotto has a passage leading all the way to *T'ian-chuh* (India).* Under the Sung† there was a monk called Che-yih, good at whistling, who used to keep apes among the hills. When he went down to the stream and gave a long whistle, every one of the apes would assemble. They called him 'Father of Apes.'

"Fei-lai Hill is a rocky hill perhaps 80 to 100 feet above the plain, within the precincts of Linyin Convent, one of the most famous of those among the hills west of the Si-hu. The convent is said to have been built early in the Sung period, by a monk from India, who, walking there with his white ape, thought the place so much like his home in India that he called it after his old convent, *Lin-tsiu* ('Spirit Eagle'), changed afterwards to Lin-yin ('Spirit Retreat), and vowed that the grottoed rock must have 'flown hither' ('*Fei-lai*') from India. It is added that the ape thought so too! Whether this means that he betook himself naturally to the peaks and caverns, I do not know. It is certain that there is a strong flavour of apes about the traditional notices and poetical quotations which make up most of the topographical chapter on this Lin-yin convent. Only the other day a monk told me that the apes had been seen on the rocks within this twelvemonth. No animals are now kept there except a few goats. There are plenty of squirrels in the trees. The great emporium of animals privileged on Buddhist (transmigration) principles, is further off, at 'Cloud-Lodge-Convent' (*Yun-tsi-She*), where cattle, swine, &c., are offered by devotees, and fed by the monks in privileged idleness.

"I cannot hear that apes or any other wild animals are treated in this way. Nor can I find 'poor gentlemen,' or metempsychosis, in any form to be specially connected with the apes either of tradition or of the present time. At one of the chief convents in this province, three days' journey from hence (*T'ian Muh*, 'Eye of Heaven' Convent), there are said to be many apes or monkeys, wild and somewhat formidable.

"For the rest, I think Lin-yin and the Fei-lai Hill probably were the object of Odoric's excursion, since, though not on the lake shores, they are often visited by crossing the lake, and walking thence 1 or 2 miles through the woodland. 'What *Thebe* is I cannot tell. If Odoric wrote badly is it possibly *Phé-lé* = Fei-lai?"

G. E. M.

"I rendered your extract into Chinese for my teacher's benefit, and to his great amusement.

"'For the love of God,' is of course the Frank monk's view of the case, projected by him upon his atheistic Buddhist brother.

"The 'release of animals' (*fang-sheng*) is, I think, meritorious in a Chinaman's eyes, not so much from any *present thought* of metempsychosis, as because of the commandment based upon it:—'Take no life.' It may have been otherwise in the days of Odoric.

"The grottoed hill, *Fei-lai-fung*, is a very good scene for the story, except that the caves are hardly large enough for quite so large an assembly as 3000. It stands over against the main entrance to the Lin-yin Convent courts, a wide, paved road overhung with oaks, planes, &c., intervening. On the road-side next the hill is a square tiled pavilion, with stone seats, overlooking a square tank of pure water, inhabited by water-tortoises and fish, a clear stream feeding it, and issuing below, by an unseen fissure in the solid limestone, in a bright little cascade, which with the floods of ages has chafed and polished the roots of the Fei-lai Rock above it.

"You cross this with a stride, for it is a mere brook in ordinary weather, or, if you please, by a pretty stone bridge below, carrying a tiled pavilion, and are in the 'shrubbery.' At present this is sufficiently wild, though very pretty—trees and shrubs of many kinds, pines, evergreen oak, maple, plane, azalea, syringa, &c., springing from the soil in the crannies of the rocky hill, in very picturesque confusion.

"The rock, both outside and in the caverns, is fretted everywhere with figures in high relief, some of giant size, some diminutive, being apparently Buddhs, Arhats, and some Brahminic deities and demons. These are, many of them, well done after the Chinese taste, and are said to be the work of the Sung times.

"The only tenants of the grottoes now to my knowledge are huge bats, as large as rabbits. A few days ago [as mentioned above] a monk told me an ape had been seen this year; but his description is hazy."

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* Or possibly, though the Chinese is against it, only the *Convent* of India, 2 miles off.

† The Sung dynasty ended with the conquest by Kublai Khan, A.D. 1278.

THE NEW STATE OF COLORADO.

DURING four months of the past summer I made a horseback ride through the most attractive regions of this, the thirty-eighth state of the Union, accompanying Dr. Hayden on his expedition, and the doctor personally on his sub-expedition to the Elk Mountains. This eminent explorer had invited me, as the representative of the Society, to go with him to see in what manner and with what results he conducted exploration in the great West.

The heart of America is a vast mountainous region, comprising the territories of Wyoming, Utah, Arizona, New Mexico, and Colorado—one-eighth of the territorial domain of the United States. Indians, Aztecs, and Spaniards are the only races of men who have left their traces on this region; and the ruins which mark their ancient habitations are quite as mysterious as those which, from year to year, are being excavated along the banks of the Nile. The population comprises 340,000 whites and Indians, the latter reaching as high a figure as 50,000. With the exception of the Mormons, who settled on the shores of Salt Lake in 1847, to escape persecution and enjoy their peculiar institutions, and the relics of the old Spanish settlements, the whites are either emigrants from the old world, adventurers in search of gold, invalids repairing shattered constitutions, Eastern farmers tilling a more fertile soil, and raising richer breeds of stock than are found on our slope, or social outlaws from the Atlantic seaboard. The nationalities preserve their native marks. The Jew is the same diligent, sober money-getter we see about the Bourse of Vienna; the Frenchman opens a restaurant, and flings out a sign, "Delmonico of the West," or "Maison Dorée," and is ever a worthy component part of the new community; the German loses a little of his fatherland stolidity, and now and then catches a breeze of the enthusiasm constantly blowing there; the Irishman, who is not generally of the higher type, exhibits both the aggressive and kindly characteristics of his race; while the American takes chances in everything, from political power to blacking boots, changing his occupation according to the shifting phases of fortune. There is not in this compound body politic any pronounced religious fervour in any direction. Churches there are, but they find stronger support in the gentler sex than among the busy men, whose lives are devoted to unflagging industry in secular pursuits. The Jesuit fathers have done noble work among the Indians, but, like all spiritual labour among aboriginal races, permanent effect could not be secured without abundant and continuous material generosity. The typical Indian is as far removed from the pen-creation of Cooper as the Italian lazzarone is from our conception of the Roman gladiator. He is in no sense a hero; there is not a particle of epic "stuff" in him, whether he be a Cochise or a Colarow. Ages ago he may have belonged to the nobler races of men, but such is not the fact now. As he exists at the heart of the continent, he is a dependant on the Government, clad in the ludicrous costumes furnished by civilization, retaining an indifferent regard for the traditional habits of his ancestors. Fidelity, except in individual instances, is rare; of ambition there is none. The Indians simply crave supplies, pass their aimless lives awaiting death, which generally comes to them through that terrible Indian destroyer—rheumatism. While strongly reprobating the inhumanity of the settlers towards, and the needless cruelties which they have sometimes suffered from the soldiery, their only usefulness to themselves and their surroundings can be found in stern treatment from a practical standpoint.

The state of Colorado had, at the time of my visit, 624 miles of railway which, by the end of 1874, was to have increased to 1168. Since 1871 the public wealth has augmented from $20,000,000 to $70,000,000. There are 200,000 acres under cultivation, and in addition to this it is considered the richest state in the union in iron and coal. Here I found that the younger women not only ride whenever practicable, but generally adopt the manner of the man. The climate, the waggon roads and rails, the high-bred and alert horses, to say nothing of the mules, all favour the woman as an equestrienne. No spirit of emulation is so keen among the young ladies as in a race for the lead or a dash for a prize. They glow with excitement and anticipated pleasure, at the very mention of horseback riding; and I do not know that even English ladies excel them in their love for this healthy exercise. In what charming contrast is this taste with the indoor, parlour recreations of the American young ladies of the Eastern States. In Colorado, among the fair sex, alluring luxuries have not yet seduced them from the hardiest and noblest of Saxon pleasures. In this it must be allowed there is a fine harbinger for the future. Profound students of Sociology have told us of the constantly diminishing stature of the French; those who have examined the brief existence of the mixed race in North America, have traced the gradual growth of all manner of constitutional disease, attributable to wrong-living and lavish mental exertion. None of this decay can be observed among those who carried good health to the territories flanked by the Rocky Mountains; instead, there is added strength and power. The proof is in the children. They are uniformly healthy, and, curious fact, are uniformly blonde, regardless of the complexion of their progenitors. These little ones are rotund of figure, with a soberer spirit than the Latin, a greater juvenile solidity than the Eastern child. To me, almost without exception, every child was a prime Saxon. Is it impossible that these flaxen-haired juveniles may not mature into a race as able in physique and as conservative in inclination as the barons of mediæval England? The mother is little perplexed there as to the future of her offspring.

The settler who arrives in Colorado from the East, taking advantage of the Homestead law, fences off 160 acres of land and secures a right to 160 more. He builds a comfortable two-story cabin, with five rooms, for $500, and begins to buy stock at $25 a head. Stock-raising and not farming is his business; and by industry in this branch, he will probably at the end of five years find himself in the possession of that which in cash is worth $10,000. It should be understood that the land he holds by right of possession is not surveyed as yet by the Land Office, and hence his ranch, in fact, covers often thousands of acres. Every ranch is a hotel. The owner holds himself in readiness to house and feed the traveller at moderate rates, and this is no inconsiderable source of his revenue.

The park-plots of Warwickshire, and the fairest, wooded swards of Middlesex, could not be more im-

pressive and suggestive of a quieter, sublimer pastoral beauty than Burgen's Park. It lies just to westward of Pike's Peak—not a day's march beyond the Ute Pass—a high-walled cañon which leads into it. What a world of magnificent solitude there was around us! The huge forms of the noble trees, rising like shafts crowned with laurel capitals, were grouped in grove-like clusters over the rolling country; and here and there in the open could be seen the granite and precipitous face of Pike's Peak, mellowed with the hues of the rainbow. The sharp outlines of the Park range, the sullen retreat of the rain-cloud over the jagged summits, the unveiling of a soft and cheerful sky, were mere details of the scenic transformation, accompanied by the music of the swift streams. To call regions like this one a park, is a feeble bit of nomenclature. With nothing dismal, with none of the glamour of the Black Forest, there seemed a faultless arrangement of episode, a marvellous naturalness of landscape gardening, a variety and perfection of nature itself.

During my three months in the mountains, from the head of the expedition to the humblest attendant, I experienced the kindness and courtesy of all. Dr. Hayden I found an incessant worker, a daring mountain climber, and a genial companion. He is most beloved by his subordinates, for during seven successive years he had substantially the same attendants, all of whom had followed him through dangers and trials innumerable; and there, too, I found his chief executive officer, Mr. James Stevenson, who, on the upper Missouri, twenty years before, had united his fortunes with the Doctor's, and together they had since struggled on.

Two classes of consumptives visit Colorado—those in the incipient stages; those who are "too far gone." The first are invariably saved; the second are invariably lost. There might be a third division, embracing cases of doubtful malignity, and with them it may be said that the larger number are restored to a sound condition of health. There is but one great evil that menaces these unfortunate invalids. They go to Colorado, establish themselves for a brief period in a simple household, eat of the rich cream and cheeses and beeves, roam over the country on horseback, and gradually abandon stimulants. Soon they find their cheeks ruddier, their frames hardier, their arms and legs tougher; fatigue rarely supervenes hard physical exercise; the cough vanishes; their spirits become elastic—and it is all gone; the malady is extirpated in three months. So they think. Vague delusion! They hurry eastward; the business craving is again upon them; the ceaseless, life-destroying ambition to make money draws them back to relapse, which is not long delayed by the eastern climate; and then, if the patient sees that all is over, he lies down to die, or makes a second but, this time, fruitless journey to the West. *It is only the hereditary or confirmed consumptive who remains in Colorado for a term of years who is restored; and to this truth I never found an exception while riding through the most populous districts of the territory.*

To those who have made any examination of the sanitary qualities of Colorado, it seems a crime that these restorative blessings have not been more widely published to the world. To a few only have they been made known, and yet hundreds of lives have been saved. Emphatically the Land of Health, Colorado by no means confines all her remedial qualities to the cure of consumptives. It is, to speak at large, a place to go for repairs—to get your constitution mended, an overtasked brain put at rest, an abused stomach renewed, a morbid tendency cut short. It is one of the evils of resorts for invalids or broken down men and women that there is no active employment. Different, indeed, is it in Colorado. When one gets on the highway to restoration, he craves labour and finds it—of the pastoral kind—everywhere.

Gold-hunting in the territories is a curious, ever-shifting, hardly describable pursuit. While in all countries subjected to the mining fever—Australia, New Zealand, Siberia, and South Africa—there is always a grave uncertainty as to the fate of an investment in "prospected" domains, there are yet laws and usages by which all that the soil or rocks yields may readily accrue to the rightful owners. West of the Mississippi we find another state of affairs. In some territories and communities where mining has gathered the dignity of a matured industry, organized effort undoubtedly reaps every advantage that belongs to priority of occupation; but even where this organized industry can show a generous income, the Eastern or non-professional investor rarely participates in the revenue. Let us glance at the method of a mine. "Texas Jim," having led a wild life in the plains, flourishing in the palmy days of Julesburg and Virginia City, when he was admired for the number of murders he committed, now having no further means of earning a livelihood, concludes he will become a "prospector." A "prospector" is a gold-hunter who has a single jackass, laden with 100 lbs. of provisions, a pick and shovel, and a gun. Thus provided, he starts into the Rocky Mountain ranges, on a three months' journey, turning over soil here and there, and disturbing granite from time to time. At last he strikes a "lode." He packs back to Denver, tells his story, exhibits his quartz, and sells out his right for a trifle, which sum is soon dissipated at the gaming-table. The "lode" now passes into other hands. A mining engineer is authorized to survey and fix the boundaries, and "claims" are duly recorded in keeping with the law. A stock concern is soon organized; the books are thrown open to subscription; pamphlets with maps on tinted paper are circulated; distinguished writers and wandering enthusiasts are entertained on the spot, and soon the mine of Swindler & Co. is the most wonderful magazine of wealth heard of in historic times. Then one of our citizens here in New York, having some capital unemployed, and his experience in those slow seven per cents. or unprofitable real property becoming tedious, thinks he will buy stock in the mine of Swindler & Co. He may lose—he knows that; but the chances are in favour of large gains. He places his money accordingly. Months roll on; highly favourable accounts are received; fresh indications of quartz are reported. The company must therefore expand to meet the emergency. It buys fresh machinery, and in order to do this call must be made on the stockholders. Now, the organizers and operators of the mine are at the "lode" itself. Without any honest intention of working a genuine and valuable mine they have actually found a rich deposit. Originally beginning with the intention to bleed Eastern capitalists, feather their own nests, and permit the bubble to burst when there would be no further need

for inflation, they have found out they own a pavement of gold. Their next step is to do what they call "freezing out" the investors. They argue "Here we are out here working this mine night and day, while this Eastern fellow has nothing to do but put his profits in the bank. We will freeze him out." They build more works, buy additional machinery, and thus assess the stockholder, until he is glad to sell out and rid himself of the whole concern. The property passes into the hands of the original operators. They have swindled valuable works out of the investors, and now probably own a lode worth several millions of dollars. Upon this they fatten to their heart's content. The mine may not always be a lode, it may be a gulch or a placer; and it may not always turn out to be a genuine lode, but only a surface indication. Where knavery has not obtained, ignorance has squandered, vast fortunes. How many instances can be mentioned where great mining establishments, many of them costing $1,000,000 and upwards, have been built in our territories, upon the belief that underneath was an Ophir and El Dorado, and when the shafts have been sunk, not enough gold to pay the postage on an Eastern mail could be found. It is safe to say, therefore, that a man not on the scene, who invests in an American mine, is almost sure to become a victim. I do not believe that there are a dozen men in New York, having mining stocks in Western enterprises, who ever have or ever will receive dividends. Indeed, nine-tenths of this class of investors have been deliberately defrauded of their money. Many millions of dollars have been sunk in the territory of Colorado alone in this manner, and it is very doubtful if the gold actually obtained from American mines since 1849 will equal the capital invested to extract it. To be sure there are hundreds and thousands who have made fortunes in mining. Many gulches have yielded immense revenues, as Alder Gulch, in Montana, from which $40,000,000 have been taken; but this sum has in the main been divided up among small and industrious miners, who however always cease their labours when they get enough money to indulge in a protracted spree. It is a part of their code that every good miner must get drunk. Their wages as hired help range from $2.50 to $6 a day; but when they work for themselves, if intelligent, they can earn more. In fact, this is the only way by which our Far-Western mines can be made profitable to honest effort and capital. If a man, intent upon making his fortune, buys an arastra and sits patiently down and crushes quartz, not dividing his time between labour and debauchery, as the majority do, it is a certainty that riches will eventually be his. All the territories are full of gold; it is only a question of patience, sobriety, honesty, and organization to gather it in quantities that will satisfy any one.

The extensive and wanton burning of the Rocky Mountain forests goes on from year to year. Perhaps the reckless miners and thoughtless travellers who are responsible for this prodigious waste, are not aware of their criminal acts, by which they bid fair to convert fertile valleys and copious river sources into arid deserts and dried-up gulches. It is a well-known and long-ago determined fact that forest destruction diminishes rainfall, and eventually banishes it altogether. Hence the anxiety on the part of all governments to save the native timber intact, knowing that in its preservation and reproduction is the life's blood of the country itself. Our Western territories have a large portion of their area now mapped as irreclaimable desert wastes, that can never be made productive except by the slow and expensive process of artificial irrigation. It is fair to presume that these empires of desolation, showing, as they do, alluvial soil, have been denuded of their vegetation and timber by the natural or supernatural incendiary. If lightning has been the criminal of course there is no remedy; but if the aborigines have been the culprits, I can only observe that they are no worse than their civilized successors. Standing on the summit of a peak, 13,500 feet above the sea, my view was obscured by the conflagration of an extensive forest of spruce and pine. A weary prospector in search of gold has turned his solitary animal out to graze, and has built a fire to drive off the autumnal cold. The resinous properties of the timber soon ignite a thousand towering torches, and the wild wind, catching the flame, disperses it over hundreds of square miles of territory. This shameful destruction may go on for months. What will be the result? This rich region will become gradually parched; vegetation will refuse to grow without moisture; brooks and streams will die out for ever; the fish which they contain, and the game which they water will leave for other haunts; important feeders of a great river-system will become extinct, lowering the level, perhaps, of such a river as the Mississippi; and one word will be written across the face of the region—desolation. It is apparent, therefore, that the most vital question in connection with that wonderful domain beyond the Rocky Mountains is the preservation of forests. Upon their inviolability depend the future homes of "the unborn millions yet to be." While it is possible for one ruthless adventurer to build his camp-fire in the wood and leave it to the mercy of the winds, thus laying waste to what would make a respectable county in our commonwealth, the destruction and consequent physical disorders will go on. Appropriate legislation sternly executed is the only remedy; and let us hope that it will find a place on our statute books, and be enforced without fear or favour.

The ascent of Italia Peak was eventful to me as affording the grandest view I had ever seen. I counted from the summit eight distinct mountain ranges, more than 200 peaks, each over 13,000 feet above the level of the sea, and 500 peaks, every one of which was 10,000 feet in height, and the traces of hundreds of streams. Figures like these would have excited my credulity had I not been an actual observer.

In no other mountain range in the world can one see in the limits of one horizon a corrugated land like this. The Himalayas present gigantic mountains rising 28,000 feet above the sea into regions of perpetual ice and snow; the Andes furnish Aconcagua and Sahama, lifting their frosted cones heavenward over 23,000 feet; the Alps have Mounts Blanc and Rosa, each higher than the king peaks of the Rocky Mountains; and Mount Ararat itself stands in the first rank of superior peaks. But from none of these can be seen the stupendous upheavals, the hundreds of miles of terrestrial convulsions, the perfect forest of mountains radiating from that ice-cold summit toward all points of the compass.

We began the ascent at 9 A.M. from the south-east

side of the mountain, having followed an Indian trail from Cement Creek, where we camped that night. We tied our horses at timber line. The line of ascent was over loose rock tumbled down from the side ridge of Italia by the expansion of ice imbedded in the crevasse. For the first few hundred yards the approach, while not steep, was very disagreeable travelling, tearing our boots, rendering creeping a necessity. About 1,000 feet from timber line we reached a jagged edge or divide, which if not as sharp as a knife, was certainly as sharp as upheaved rocks well can be. We carefully climbed up this edge, feeling our way over split rocks, often loosened from the mass, knowing that an incautious step, or the giving away of a single inch of granite, would precipitate us down the ugly declivity 2,000 feet below. While coolness is the only attribute that gives certainty of life in such situations, I doubt if any one has entire peace of mind. Jokes pass freely; there is a grim smile on every face in the party, but I observe that the muscles tauten, the grip is sure, the caution excessive, and anxiety is not a stranger to the facial changes, not even terror itself. Up and down along this divide, for about 800 feet, finding a foothold now below, now above, lowering one's self down narrow chasms in the rock, again hanging by the hands to a strong stratum for a moment's rest, at noon we finally reach a minor summit, 12,200 feet above the sea. But we were not up yet.

Accompanied by Mr. Brodhead, we now began a necessary descent of a rocky gorge piled up with granite blocks. The progress was slow and perplexing, involving a downward descent of 1,000 feet. This accomplished, without adventure, we passed along the divide, and were at the base of the main peak. Here began severe physical climbing. At every ten steps, so steep was the mountain side, so loose the earth, and sharp the fragments of stone, that we were obliged to stop—"blown." The pulmonary exertions at such intervals were violent indeed, causing dizziness, stomach-sickness, rush of blood to the head; and if perchance you are unfortunate enough to cut your boot into the fleshy part of your foot, the ascent is not thereby sweetened. During adventures like these, a piercing wind, borrowing an icy chill from the snow and ice, penetrates to one's inmost. As panting mountaineers struggling in friendly rivalry, I am sure my companion and myself were not in enviable situations during the 2,000 feet that intervened between us and this summit. Climbing up the bald side, making slow progress, we reached the tip-top, 13,400 feet above the sea, at 2 P.M.

Let us now, beginning to northward and following the points of the compass around to eastward, take a view of this magnificent scene. As I scan the horizon, I can see eight ranges. The Elk Head Mountains; the Elk Mountains proper—a range 80 miles long; the Sawatch, or principal range of the Rocky Mountains; the Park range; the Snowy range; the Sangre de Cristo range; the Uncompagre range—a massive agglomeration of unnamed and gigantic peaks, bounding the southern horizon; and the San Juan group—unexplored. In these ranges are the loftiest and grandest mountains of the domain belonging to the United States. I do not think I could have a superior point of observation than Italia itself, an upheaval of eruptive, igneous rocks, lying in loose stratification, and discoloured by the presence of iron, resembling in their hue the close-grained porphyries of Eygpt. At a distance this peak looks like the Italian flag, and is so named because of that fact. On its northern slope columnar granites rise above their surroundings, forming isolated monuments; loose beds of shale extend into the valley, where I detect two small, frozen lakelets. The view, over folds of hills and intervening valleys, extends to northward, embracing Grizzly Peak, 15 miles distant, catching the fading summits of the unknown Elk Head mountain range, 100 miles away. Spruce, fir, and cedar trees, bearing their oceans of foliage in the brisk wind with peculiar rigidity, are in their dark hues relieved by the lighter tints of the quaking asp. Wooded hills, terraces, and moraines, losing their sharp outlines in the dark and fading distance, make up the scene of comparison and contrast, as the moving and silvered nimbus clouds give an artistic completeness to the whole. Turning slowly to eastward, La Plata, Elbert, and Massive Mountains are seen; while beyond there we have glimpses of the famous Park range, itself containing hundreds of lofty mountains. Turning a little more to eastward, and at our feet is the Gunnison Park, and the sources of the Gunnison River—a stream winding in all directions, and fertilizing hundreds of thousands of square miles. In all this quarter of the horizon, the number and variety of colours are amazing. Now some peak is touched with a deep carmine of royal purple, and again we find the blank slate colour marking the mountains which flank the Luke-Creek Pass—the main divide. These mountains, although superb in their structure and altitude, have no name. To southward of eastward are those three gigantic mountains, Harvard, Princeton and Yale, sitting at the edge of South Park, bold, sharp, and defiant like those rock-bound colleges themselves. Our pack-train is slowly winding its way over the summit of a hill in my foreground, bound for Italia Creek; and 50 miles to the south-east of it is the Snowy range—not snowy like Blanc and Chimborazo, but just sugar-coated like the crust of a too tart pie. Sullen clusters of timber, populated by the grizzly bear, and containing untold herds of deer and elk, diversify the view, as I take a glance at the Sangre de Cristo range, all but invisible 100 miles away. This is a sharp and narrow range, almost parallel with the Great Sawatch range. Again I get a distant view of the Gunnison Valley—now a broad, undulating region, that must eventually become a garden spot on this slope. Almost due south is the majestic Uncompagre range—unexplored until last season, but since surveyed by Mr. Wilson; there are, perhaps, a dozen peaks in this range above 14,000 feet in height, forming a magnificent barrier against the southern sky. Uncompagre Mountain, the king-pin of all, rises like a huge dome, covered with ice and snow, but exhibiting dark patches of its granitic formation. *Los Vinos* Indian agency, where the Indians gather to wage war for flour and general supplies, lies in the open beyond the Elk Mountains, while Crested Butte, and Gothic Mountain, and Washington Gulch are all within an area of 50 square miles. Again, in the dim distance is the San Juan range, also being explored by Mr. Wilson. To westward the peaks are too high and too numerous to permit an extended view, the sharp head of Capitol Peak jutting up behind its neighbour

Mount Daly, while Maroon Peak, Pyramid, Teocalli, and Castle Peaks close up the circumference of the horizon. Such in brief is the view of a mountainous region of 60,000 square miles, and the grandest mountain region in the world. Teocalli, named after the sacrificial mound of Mexico, is itself one of the most curious mountains known, seemingly built up in horizontal strata to the apex; every view of it presents the same appearance of artificial work. Passing along one day with the train, I asked one of our sapient packers if he knew why yonder peak was named Teocalli. "Yes," he replied with ambitious haste; "it was named after Mr. Thomas O'Kelly, who is a well-known prospector in the mountains."

You can perhaps imagine from this brief description a scene enlivened by forest fires perpetually burning; herds of deer and elk running in all directions along the glistering streams that shine like fragments of mirrors in the deep valleys, thousands of feet in all directions; the short crack of the rifle whose bullet ends the life of a mauve-coloured buck or doe; and the movements of the topographer and geologist, instrument in hand, marking the structure and conformation of the extended area.

Our ascent of Mount Daly afforded me remarkable scenes for study.

After penetrating the thick and sharp-pointed branches of a pine forest, completely filling up a gorge, we made our way up the hill side of a long moraine, and continued our journey westward. Moraines of a long, tomb-like shape are seen in every direction, and there they stand, mournful sepulchres of a once mighty physical age, when the grinding ice, piled up thousands of feet, carved out the valleys and amphitheatres, and, as huge and many-edged chisels, completed the sculpture of the continent.

The most difficult work of the expedition was in finding appropriate names for mountains, streams, and parks. Heretofore the system of nomenclature has largely followed the tide of politics. When Mr. Colfax was at the zenith of his popularity he was made illustrious to an extent too ludicrous to be believed. Fremont is probably celebrated twenty times; General Grant has more than a dozen geographical monuments. Probably the most astonishing use of proper names is in the case of Mr. Laramie, an enterprising Canadian trader. We have the Laramie range of mountains, a gigantic upheaval; Laramie Plains, Laramie City, Mount Laramie, Fort Laramie, and the Laramie division of the Union Pacific Railroad. This plurality is not always pleasing. Professor Guyot, the venerable and distinguished geographer of Princeton College, is the victim of a small peak in North Carolina, and justly honoured by a noble one in the Rocky Mountains. The former, named without his approbation, he ignores; but the latter Dr. Hayden selected as a deserving tribute to his great attainments. A noble mountain in the Elk range was named after our President, Chief-Justice Daly, in recognition of his eminent services to science, which Fellows of the Society can so readily indorse and applaud. But the lavish distribution of proper names over the face of the country is a vicious principle, inducing confusion, and perplexing the student. Yet it will go on until some patient scholar shall sit down and tabulate a comprehensive system to be adopted by the Government. Whoever shall undertake this task must be a profound philologist; for there are over 1,000,000 peaks in the Rocky Mountains, and only 40,000 words in the English language.

The survey of the territories as prosecuted by Dr. Hayden exhibits the scientific progress of our time; for the maps made under his direction show finer topographical distinctions than those obtained by the older methods; indeed, none of our States, if we except California, have creditable maps, executed on a plan of unity and precision. Dr. Hayden selects a defined area, and exhausts it in geography, and almost every collateral branch of science; and this is the reason that Geikie, the eminent geologist of the University of Edinburgh, writes, "Your Yellowstone work has roused the greatest interest here; and the way in which you have illustrated it by description, engravings, maps, sections, and photographs, is quite a triumph of scientific exploration, and almost arouses a feeling of envy in the breasts of governmental geologists like myself who either have no such splendid materials to work upon or are in the hands of economical governments who will not allow them to publish fully the results of their labours." There is one hundred and fifty years of labour in the territories for Hayden and the other government expeditions before we shall have a knowledge of what we own; but before that time it is probable that the net-work of railways west of the Mississippi and the growth of the far western political fabric will increase the Union to one hundred States, the new-comers each larger than Massachusetts; and not a few of them will be on those great plateaux flanking the Rocky Mountains.

What is needed to develop to the highest degree, and with the most satisfactory results, this, the fairest region of America is:—Firstly, a gathering of all the Indians within the borders of Indian territory, their consolidation into sympathetic tribes, and the appointment of an army police to maintain order and to assist, when necessary, in executing the laws, and when the moment shall be deemed expedient, to give them a special system of civil jurisprudence, eventually admitting them to the rights of citizenship and state sovereignty within the Union. This would, in a short time, dispose of the vexatious Indian question, large army appropriations, and annual Indian wars. There are 300,000 Indians of all ages and sexes in the United States.

Secondly.—An entirely new and complete system of laws, fundamentally new, and adapted to western life, should be drawn up by a commission authorised by Congress, to consist of three of the purest and ablest public men from each territory. The past should be ignored, and statutes should be framed and adopted of a simple but comprehensive character, that would leave little to be done by a State subsequently admitted to the Union. Wise provisions would be these:—

1. That no man should be eligible to the gubernatorial office who shall not have been for five years preceding his appointment an actual resident of the territory.

2. That each territory shall undertake the systematic exploration and survey of its own domain, under the general direction of a bureau of exploration, especially created at Washington.

3. That the territorial government shall be responsible for the preservation of the public domain.

Thirdly.—Liberal landed inducements to settlers and capitalists.

Fourthly.—Irrigation by the government.

Fifthly.—The encouragement of narrow-gauge railways.

Sixthly.—Stringent laws to punish those who deceive capitalists by spurious enterprises, thus destroying the prospects of the territory.

Seventhly.—A government bureau of mining to secure fair dealing.

Eighthly.—A territorial department to protect the forest from destruction.

And here I would call attention to four important maxims—

1. Beware of rose-coloured pamphlets.

2. Move with deliberation, and never rush with the crowds.

3. Divide all dazzling enterprises by four, and ask yourself if you can afford to lose the quotient.

4. Narrow-gauge railways are the surest forerunners of a healthy civilization.

I visited Utah in October and was received by Gentiles, Brigham Young, and the minor Mormons, with the utmost courtesy.

My general impression is that polygamy is a doomed institution. As long as the Saints could maintain isolation, living a three months' journey from California, and four months from the Missouri River, polygamy could be compelled by the fierce threats of the autocrat from the rostrum of the tabernacle. But when the railroad came, fashion invaded the realm of the Latter-day Saints. The women began to despise their coarse gowns, and peasant lives; and soon Salt Lake City was embellished with fineries scarcely inferior to those sold in New York. Thereafter more than one wife severely taxed the purses of the seers and prophets, who, as a class, are men who love money. Plurality in marriage began to lose its fascinations; a son of Brigham Young rid himself of a duplicate partner, and in domestic matters obeyed the behests of the Christian creed. Household ties loosened; and in the family of the prophet himself bitter dissensions arose as to the distribution of his large wealth. The young girls and men who have grown up since 1850—now unmarried—and of whom there are 30,000, abhor polygamy, and will not embrace it; and the President is powerless to coerce. Their religious belief, constantly riddled by satire and stung by ridicule, is slowly ebbing away. The success of Mormonism was due to heedless persecution, which always gives strength to every imposition; for repressive measures only serve to strengthen the institutions they are designed to destroy. The death of Brigham Young will undoubtedly speed the disintegration of the Mormon legions.

Utah has no territorial or municipal debt. There are 242 miles of railways and 1100 of telegraph. The population is about 150,000. There are about 264,500 acres of land under cultivation. The exports for 1873 amounted in value to $10,000,000 consisting equally of ore and bullion and agricultural products. Mountains of silver, lead, copper, iron, salt, sulphur, and coal are found here.

On the exploration of this great region of the continent nearly $20,000,000 have been spent since 1803—enough to have completed the survey of the public domain, if systematic work had been followed. But as it is, nearly all our information of value has been collected during the past ten years. The Coast Survey alone has spent on the average over $200,000 annually west of the Mississipi; and, generally speaking, in connection with exploration, over 10,000 men have been employed. Significant facts connected with that extended area should not escape attention. In the first place, two-fifths of the entire area of the United States is so arid that even irrigation cannot redeem it; indeed, west of the Mississipi, one-sixth of the entire territory is alone susceptible to cultivation; and if you ask the reason why, the answer is plain—the great unwatered plains traversed by the Union Pacific Railway are essentially Asiatic, with Asiatic deserts, climate, and ethnological relics. It is Asia on this side of the Pacific; while the eastern half of the Union resembles Europe in configuration, climate, flora and fauna. In Colorado, New Mexico, Arizona, Nevada, Utah, Wyoming, Idaho and Montana, not one-fifteenth of the area can ever be rendered available; and it is doubtful if any of these territories will support more than 300,000 people at a time—from our present knowledge of their resources and agricultural methods; and in the territory of Wyoming not over 5000 square miles of the 100,000 square miles of area can be termed arable land.

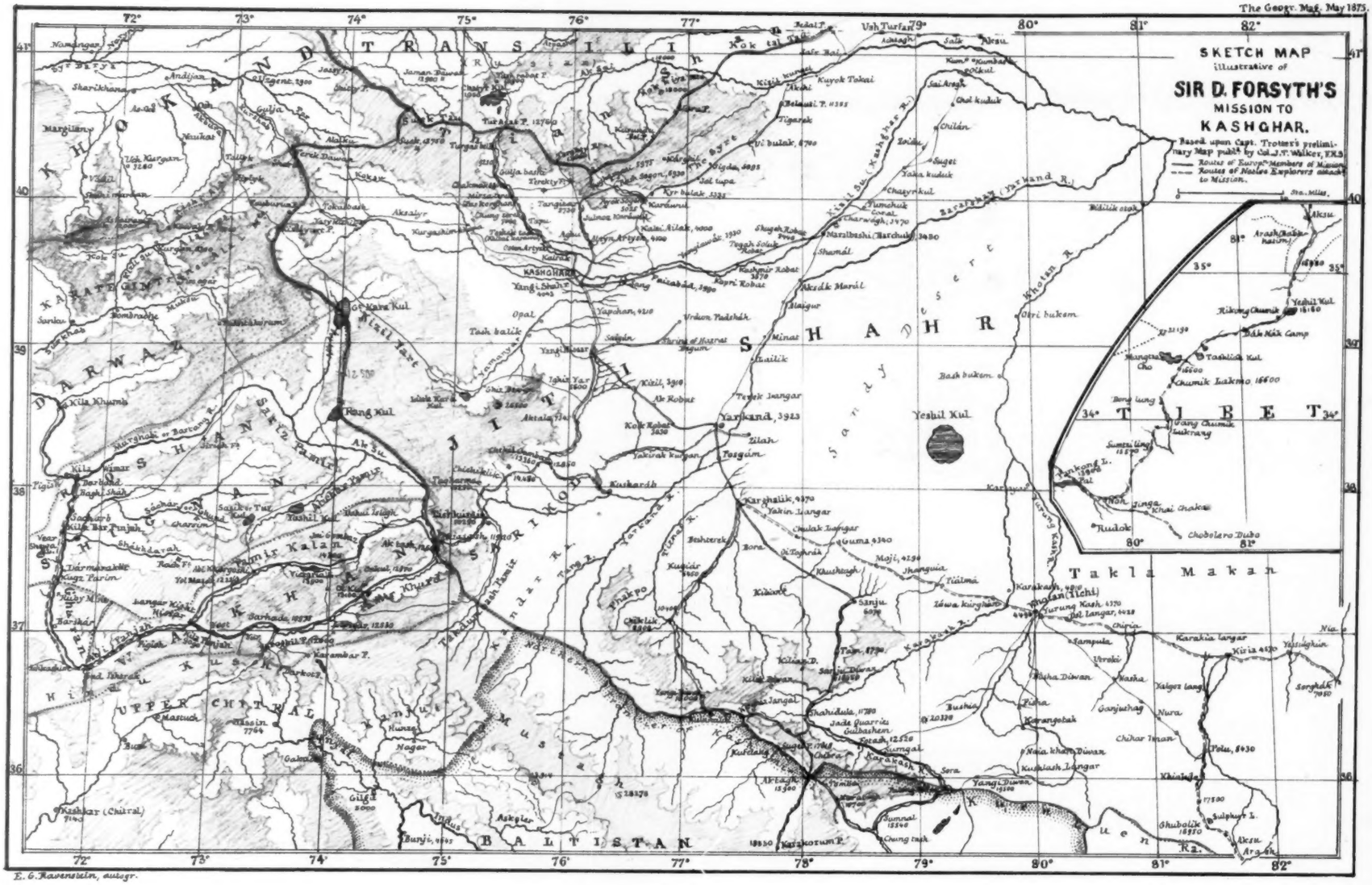
My visit to Colorado was the pleasantest period of my life, half of which had been devoted to domestic and foreign travel. I saw nothing but the bloom and beauty of the present, and the golden promises of the future. The terrors described by the early explorers had passed away; the dangerous beasts, untouched, displayed no aggressive ferocity; the early miscreants, who killed and plundered, had died or fallen into honest pursuits; the wild gold fever was subsiding into a regular and organized business; towns and cities were putting on the manner of our social East. The civilising methods, no longer what they were but twenty years ago, were in active operation, defining the abodes of the future millions. Everything and everyone seemed to be settling from a long and wearying fermentation. Caution was replacing recklessness, stability the fragmentary institutions of other days, and in the midst of this region of mountain and valley, this region of the grand and picturesque, this land of prosperity for ages yet to come, I felt that there was but one great work to be accomplished—the admission of Colorado into the Union, and that has been the redeeming act of the 43rd Congress.

ALVAN S. SOUTHWORTH.
Secretary of the American Geographical Society.

THE NORTH-WEST AFRICAN EXPEDITION.

WHEN Mungo Park visited the kingdoms lying upon the Upper Niger, he found them peopled by a race of highly intelligent men with whom he thought a trade of considerable importance might be done. Since his days other travellers have confirmed his opinion, and it is now a well-known fact that in North-West Central Africa there exists a market for our goods, which once opened, would amply repay any expenses entailed by so doing.

But though the existence of this market will not be denied, it is situated in such a position that commercial intercourse with it has hitherto been of the most



E. G. Ravenstein, autogr.

meagre kind. Surrounded as it is on the north by the arid sands of the Sahara, and on the south by the barriers of the Kong Mountains, access to it has been a matter of extreme difficulty.

Caravans start from Tripoli and Morocco, and after a weary journey of many months across the desert, succeed in bringing in a very small quantity of European goods to Timbuctoo, Kano, Sokatoo, and other commercial stations, but with their cost so greatly enhanced, that in spite of the great desire of the inhabitants to possess themselves of European manufactures, only the wealthy few can avail themselves of the opportunity given them of so doing by means of the caravan trade. The freight of goods by camels from Tripoli to Timbuctoo has been estimated by several high authorities as about 40*l. per ton!* At the present day, as was the case in the earliest ages, the camel is the only means of transport, since the Niger is impassable from the sea above Rabba, and a journey across the Kong Mountains is out of the question altogether.

Mr. Donald Mackenzie, an engineer, some years ago turned his attention to this part of Africa, and the result of his investigation has been as follows:—The north-western portion of the Sahara, west of the table-lands of Mourzuk and Asben, consists of a vast depression, many feet below the level of the sea. This huge basin stretches from the fertile regions of Tafilet and Twat on the southern slopes of the Atlas to within a few miles of Timbuctoo, and from Truza and Azawad westward to the high lands of Maghter and Aderer near the Atlantic. In shape it is somewhat similar to an irregular parallelogram, and its boundaries are most clearly defined by steep cliffs and high banks, which, as does the whole bed, present indisputable evidence of their having been washed by the sea in comparatively recent times. From the north-west corner of this depression a V-shaped valley runs towards the Atlantic, its mouth being known on our charts as the river Belta, opposite the Canary Isles. Travellers who have crossed tell us that it appears as if the sea had left it but yesterday, and its bed is also, like that of El Juff, considerably below the sea level. Accumulated sands at the entrance, however, have blocked out the ocean, and under the intense heat of a tropical sun even such an inland sea as was El Juff must soon disappear, leaving only the precipitated salt and marine débris to tell of its former existence.

Mr. Mackenzie's scheme is to cut through the sand-bars which obstruct the mouth of the Belta Valley, and let the waters of the Atlantic again flow over this ancient sea bed. By so doing an inland sea would be formed, which would constitute a highway into the very heart of Africa. The enormous mineral and vegetable wealth of Tafilet and Twat would be at once placed near at hand. The Asben and Twarick countries would be brought within the reach of civilization, while the kingdoms of Bambara, Songhay, Houssa, &c., with their twenty millions of inhabitants, would be lifted out of their isolation, and goods which now have to pass over 1700 miles of desert, occupying *four months* in transitu, could be placed in the hands of the Arabs in fourteen days from the time they left the manufacturer, and Timbuctoo would be brought within 800 miles of the Atlantic.

In exchange for our goods we should receive coffee, cotton, indigo, rice, india-rubber, copper, &c., which are abundant, while the fertility of the country is such that almost any tropical product might be grown.

To accomplish this great work a survey is the first thing to be obtained, and the North-west African Expedition will be despatched with that object. Mr. Mackenzie will be accompanied by Mr. J. A. Skertchly, F.R.G.S.; Mr. S. B. J. Skertchly, F.G.S., of H.M. Geological Survey; Mr. A. Fairlie, ex-Engineer to the Emperor of Morocco; Mr. Henry F. Brion, and other gentlemen, so that a complete and exhaustive survey of the valley of the Belta and the boundaries of El Juff can be made.

From the researches of Dr. Barth, Caillie, Panet, Riley, and other travellers, a relief model of the district has been prepared by Mr. Henry F. Brion, by which it can be at once seen that El Juff is a natural depression, into which the Atlantic waters would at once flow if the sand-bars at the mouth of the Belta were cut through. This model may be inspected and every information obtained at the offices of Mr. W. Archer, Norgrove Buildings, Clark's Place, Bishopsgate, E.C. Eminent engineers who have been consulted on the subject are unanimously of opinion that no serious difficulty lies in the way of the success of the project; while the trade which would at once be developed would very speedily recoup the promoters for their original outlay, and if the arid desolate waste of El Juff, within whose bosom not a living thing exists, can be converted into an inland sea, Northern Africa will be at once laid open for the advancement of Christianity and commerce.

The expedition is entirely supported by voluntary contributions, and hopes to start during the present month. On their return, should their report prove favourable, the engineering operations will be commenced and the idea carried out.

J. A. SKERTCHLY.

MAP OF SIR DOUGLAS FORSYTH'S MISSION TO KASHGHAR.

WE are indebted to the kindness of Colonel J. T. Walker, R.E., F.R.S., the Superintendent of the Trigonometrical Survey of India, for an early proof of Captain Trotter's preliminary map illustrating Sir Douglas Forsyth's Mission to Kashghar.

The results achieved by the members of this mission are of the highest geographical interest, and we therefore place this map at the earliest possible opportunity in the hands of our readers. A more perfect map, embodying the whole of our knowledge of that portion of Central Asia, we propose to publish in one of the next numbers of our magazine. The positions of all places visited by the mission depends upon Captain Trotter's astronomically fixed position of Kashghar (Yangi-shahr), viz., latitude 39° 24′ 26″ N., longitude 76° 6′ 47″ E., from Greenwich. The routes followed by the European members of the mission are indicated by continuous red lines, those of native assistants by dotted lines. Amongst these latter that of a Pundit down the Abi-Panjah to the frontier of Darwaz, is the most important. Another native explorer carried a traverse survey from Tashkurgan to Yarkand, and a third, Krishna, proceeded to Khotan during Captain Trotter's absence in Wakhan, and penetrated as far as the Sorghák gold fields. Then, returning to Kiria, he struck southwards along the road to Rudok, and reached the village of Noh, which is about 20 miles to the north of Rudok. Here he was stopped by the Chinese officials, but eventually he was permitted to go direct to Leh by the Pangong Lake.

Reviews.

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SIR RODERICK MURCHISON.*

THERE have been very few men, in our time, whose life embraced so wide and varied a sphere of usefulness as that of Sir Roderick Murchison. Not only was he himself a prominent labourer in the field of geographical research, but his influential encouragement and guidance was a most important aid to many other workers in various branches of science and literature. He thus had the rare good fortune of continuing his career of usefulness long after his own time for work in the field was past. For him there was no retirement, no cessation of valuable labour, and although he lived to a good old age, his loss was as much, or perhaps even more felt, than if he had been cut off in the prime of life.

Sir Roderick was justly anxious that, in the record of his life, his own labours in the field, his career as a geologist, should form the most prominent feature. It is this career—the distinguished position he won for himself by his indefatigable industry, combined with talent of a high order, as one of the leaders and founders of the science of geology—which will secure for him a permanent place in history. He, therefore, did well in selecting a geologist as his biographer, and Mr. Geikie has performed his difficult task with much judgment and literary skill. By including a sketch of the more salient features in the rise and growth of the geology of the older formations in Britain, and notices of contemporary workers in the same branch of science, he has brought out, with more distinctness, what Murchison's own labours were, and what he actually achieved.

Roderick Impey Murchison was born at Farradale, in Ross-shire, on the 19th of February 1792; the son of Dr. Kenneth Murchison, a surgeon in the East India Company's service, who, on his retirement, bought the estate of Farradale in 1786, and settled down as a Highland laird. His mother was a daughter of Mackenzie of Fairburn, and the first fruits of her marriage received the name of Roderick from his maternal grandfather Roderick Mackenzie, an old laird who lived for more than ninety years. The second name was after Sir Elijah Impey, the Chief Justice of Bengal and an intimate friend of Dr. Murchison. Losing his father when only four years of age, he left Scotland and never resided in that part of the island afterwards, so that he was entirely free from any Scotch accent. His mother was married a second time, to Colonel Macgregor Murray, and in 1799 young Roderick was sent to the grammar school at Durham, where he remained for the six following years. In 1805 he went to the military college at Great Marlow.

He was induced to enter the army by his maternal uncle, General Mackenzie of Fairburn, and, at the age of fifteen, he was gazetted to the 36th regiment. In August 1808 he was present at the battles of Vimiero and Roriça, of which he gives a detailed account in letters to General Mackenzie. Murchison also served with Sir John Moore in his famous retreat to Coruña, a hard and severe experience for so young a soldier; but we miss, in the narrative of Mr. Geikie, several of the stories which Sir Roderick was wont to tell of his old campaigning days. He afterwards served in Sicily as aide-de-camp to his uncle General Mackenzie.

The turning point in Murchison's life was undoubtedly his marriage with an accomplished and highly educated lady, who gradually turned his mind to higher things than fox hunting and shooting, and continued, during the busiest period of his working life, to be a sympathetic companion and fellow labourer. On the 29th of August 1815, he was married to Charlotte, daughter of General Hugonin of Nursted House in Hampshire, and, retiring from the army in the same year, he for some time devoted himself to a life of fox hunting, first in Durham and afterwards at Melton, varied by short visits to the continent. It was while staying at Rokeby, with his old friend Mr. Morritt, that he finally resolved to abandon the aimless and useless life he was leading. He met Sir Humphrey Davy at Rokeby, and experienced much gratification from his lively illustrations of great physical truths. Sir Humphrey encouraged him to study chemistry by attending lectures, and as his wife strongly backed up this advice, he sold his hunters and, after a short residence at Nursted with General Hugonin, he came to London and changed his whole mode of life.

In 1825 Roderick Murchison commenced his new career. "Henceforth," says Mr. Geikie, "he was to have an occupation even more absorbing than any which had yet held him in thrall, and into this new employment he was to carry all the energy which had hitherto marked his doings in other pursuits. From that time forward it was to be his good fortune to have one engrossing occupation, which, while furnishing abundant exercise and amusement, before long enabled him to make his name a kind of household word among geologists in every part of the world."

Murchison's active field work as a geologist may be said to extend over the following quarter of a century; and the story of it is admirably told by Mr. Geikie. After a dozen years of close study and untiring labour in the field, his great work, "The Silurian System," was published in 1838. "It forms one of the landmarks in the history of geology. It gave for the first time a detailed view of the succession of the geological formations of more ancient date than the Old Red Sandstone," and thus opened up a whole series of new chapters in this marvellous history of life which geology unfolds. Dr. Whewell spoke of it "as an admirable example of the sober and useful splendour which may grace a geological monograph." Murchison's term "Silurian" was henceforth adopted and applied to the rocks where similar groups of fossils occur in all parts of the world. This was the great work of his life; and then followed his researches in North Devon, and his more famous campaign in the Ural Mountains, which won for him so many distinctions from the Emperor of Russia.

But it is to his career as a geographer that the readers of this magazine will naturally turn their attention, in reflecting on the great services of their

* *Life of Sir Roderick I. Murchison, Bart., K.C.B., F.R.S., based on his journals and letters;* by Archibald Geikie, LL.D., F.R.S. 2 vols. Illustrated with portraits and woodcuts. (Murray, 1875).

long tried and well loved President. On the study of geography Sir Roderick brought to bear the knowledge he had acquired as a geologist, as well as a great store of information collected during a long course of reading, and for forty years of his life the wider and more popular science was only second in his regard to his earlier friend—geology. Mr. Geikie has not altogether neglected the geographical portion of Sir Roderick Murchison's biography, yet, although we fully recognise the greater importance of our old President's work as a geologist, we cannot help feeling that the geographical side of his life-story needed fuller and more adequate treatment than it has received. In the few remarks with which we propose to conclude this notice we shall refer to facts which have been but slightly alluded to, or altogether passed over by Mr. Geikie.

Sir Roderick Murchison joined the Raleigh Travellers' Club in 1828, being proposed by Sir John Franklin, and seconded by Major Keppel. The club had been formed in the previous year with the object of bringing together travellers in all parts of the world. In 1830 there was a memorable meeting of five members of this club, in one of the rooms at the Admiralty, at which it was resolved to establish the Geographical Society. Those five members were Sir John Barrow, Sir John Hobhouse (afterwards Lord Broughton), Robert Brown (the Prince of botanists), Roderick Murchison, and Bartle Frere, uncle of the late President of the Society. Sir Roderick always laid special stress upon the fact that he was one of the five originators of the Geographical Society, and he caused a memorandum on the subject, in his own handwriting, to be bound up in the Raleigh Club's earliest book. His subsequent aim was to induce all the members of the Raleigh Club to join the Society; and from the first constitution of the Geographical Society in 1830 to the day of his death, a period of over forty years, Sir Roderick devoted himself to the advancement of its interests. In 1844 he was elected President for the first time; in 1852 he was re-elected; and, again, in 1857, 1858, 1859, and 1861. From 1863 until 1871 he was elected, year after year, and the unanimous feeling of the Fellows, whose numbers constantly increased under his auspices, was that his services were indispensable to the Society's well being. In 1854 the Raleigh Club was dissolved, and was succeeded by the Geographical Club, the members of which were all to be Fellows of the Society; and Sir Roderick continued to be President of the Geograghical Club from 1854 until the day of his death. In these capacities he took every opportunity of encouraging young travellers, of fostering geographical enterprise, and of giving a warm and hearty welcome to all who returned from any expedition which had for its object the advancement of geographical science. The President of the Geographical Society thus had many opportunities, which he never neglected, of performing kind and gracious acts, and he thus won the warm and affectionate regard of all who had the advantage of his acquaintance, and of hundreds who never saw him, but who derived advantage and encouragement from his generous notices of their labours.

As a geologist, Sir Roderick early saw the importance of comparative geography, by which the changes in the physical aspects of the earth's surface, within the historical period, can be traced. Hence, he warmly supported the formation of a society for the translating and editing of early voyages and travels. When the Hakluyt Society was formed, in 1847, he was elected its first President, and he continued to fill the presidential chair of that Society until the day of his death, constantly attending its meetings, and taking an active part in the selection of the volumes, and in the choice of editors. The literary work thus accomplished has been of the very highest value to geographical students, and it is strange that Mr. Geikie should have made no allusion whatever to Sir Roderick's labours during twenty-five years, as President of the Hakluyt Society.

The last work of the untiring President of the Royal Geographical Society was connected with the purchase of a freehold house, and the establishment of the institution, which he had loved and served so well, in a home of its own. But he was struck down with his last illness before the move from Whitehall Place to Savile Row was completed. His warm interest in the welfare of the Society, however, still continued; and in one of his very last drives he was taken to the house in Savile Row, and all the doors were thrown open at his request, in order that he might look through into the new map-room from where he sat in his carriage. Sir Roderick Murchison died on the 22nd of October 1871; and he was followed to the grave by the new President of the Geographical Society, Sir Henry Rawlinson, by Admiral Collinson, and by the Secretaries Mr. Clements Markham, Mr. Major, and Mr. Bates. Geographers will most cordially concur in the closing words of Sir Roderick Murchison's biographer:—

"Many a humble fellow worker in science did he encourage and materially assist. When he had given the right hand of fellowship to a man he stuck to him. The devotion indeed with which he espoused the cause of a friend had something altogether chivalrous about it. Let us carry with us through the rest of life the lessons which the dominant features of his character and work may teach: his persevering industry, his readiness to be helpful, his loyalty to friends, and above all his life-long and entire devotion to the advancement of knowledge. It will be many a day before another man arises to fill among us the honourable and useful place from which we shall long miss the presence of Roderick Impey Murchison."

THE SAILOR'S POCKET BOOK; a Collection of Practical Rules, Notes, and Tables for the use of the Royal Navy, the Mercantile Marine, and Yacht Squadron; by *Commander F. G. D. Bedford, R. N.* (H. M. S. 'Agincourt.') Second Edition revised and enlarged. (J. Griffin & Co., Portsea. 1875.)

WE reviewed the first edition of this valuable and excellently arranged little work when it was first published (See p. 28 of our April number, 1874); and we now gladly welcome the appearance of a second and enlarged edition. Its publication is a proof that both the navy and the merchant service largely share the view we then expressed, as to the great usefulness of Captain Bedford's *Sailor's Pocket Book*. The second edition has been ably revised and passed through the press by Staff-Commander Hull of the Hydrographic Office, while some additional matter was supplied by Admiral Ryder, especially with regard to saving life from shipwreck

WANDERINGS IN THE INTERIOR OF NEW GUINEA. By *Captain J. A. Lawson.* 8vo. pp. 389. Map. London (Chapman and Hall).

CAPTAIN LAWSON has written a very amusing book of travels in New Guinea. He describes circumstantially a journey inland, from a village near Torres Strait to within 30 miles of the north coast of the island, claims to have discovered several active volcanoes, and to have ascended, in the space of nine hours, a mountain rising to the astounding altitude of 32,783 feet, to a height of 25,314 feet. He encountered, in the course of his wanderings, herds of hump-backed cattle and black oxen resembling the American bison, troops of monkeys, deer in large numbers, and tigers, rivalling in size those of Bengal. None of these animals have been met with hitherto in New Guinea by other travellers, who were content with tree-kangaroos and wild pigs, neither of which Captain Lawson has been fortunate enough to observe there. We understand that the author has brought back to England several trophies of the chase, and we much trust he will be persuaded to exhibit them and read a paper at an early meeting of the Royal Geographical Society.

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QUER DURCH AFRIKA: REISE VOM MITTELMEER NACH DEM TSCHADSEE UND ZUM GOLF VON GUINEA. Von *Gerhard Rohlfs.* 2 vols. 8vo., pp. 668. Maps. Leipzig, 1874-5. London (Trübner & Co.).

THE substance of these two volumes has already appeared in the Supplementary Parts, No. 25 and 34, of Petermann's *Mitheilungen*, but Dr. Rohlfs has partly recast his narrative, so as to render it more readable, and he has added an account of his journey from Tripolis to Rhadames and thence, by a route not previously described, to Fezzan. The meteorological tables have been omitted, but a list of the plants collected, as well as of those incidentally referred to in the work, both the scientific and native names being given in every instance, has been added. The maps accompanying the work are excellent, and contrast favourably with those too frequently accompanying English works of travel.

We need hardly remind our readers that the journey here described is one of the most remarkable ever performed by a European, and was rewarded by the Royal Geographical Society by the award of their Patron's Medal, and as events in Central Africa do not travel with the rapidity they do in Europe, Dr. Rohlfs's narrative, though published five years after his return to Europe, will be read with undiminished interest.

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HUMBOLDT'S NATUR-UND REISEBILDER: Pictures of Nature and Travel from Alexander von Humboldt's personal narrative of travel and aspects of nature, with a commentary, scientific glossary, and biographical notice of the Author. By *C. A. Buchheim, Phil.D.* 8vo, pp. 352. London (Trübner & Co.).

PROFESSORS of German have hitherto almost exclusively availed themselves of works of fiction or of history for the purpose of teaching their more advanced pupils. Dr. Buchheim has struck out a new path, and inasmuch as he makes Alexander von Humboldt, the greatest German traveller, his vehicle of instruction, he is deserving the thanks of all those interested in the popularisation of geographical tastes. Dr. Buchheim has selected twenty-seven chapters from the *Travels into the Equinoctial Regions of the New Continent*, and three of the essays from that fascinating work, *Aspects of Nature*. The notes appended to these selections are, as a rule, judicious and to the point, and the *Life of Humboldt*, prefixed to the volume, will be perused with interest even by those who have read more comprehensive works on that subject.

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DIE SCHWEDISCHEN EXPEDITIONEN ZU EAFORSCHUNG DES HOHEN NORDENS, 1870 UND 1872-3. Von *Dr. Oswald Heer.* 8vo., pp. 48. Zürich, 1874. London (Trübner & Co.).

DR. HEER, the author of the magnificent *Flora fossilis Arctica* and of numerous essays and papers bearing upon the same subjects, discusses in the pamphlet before us the results of the Swedish expeditions under Professor Nordenskjöld with reference to his favourite study.

The fossils discovered in the cretaceous and miocene formations of Noursouk Peninsula in Greenland afford convincing evidence of the secular changes of temperature which have gone on there. The fossil plants discovered in the lower chalk point to a hot and moist climate. At that time there existed luxuriant forests of conifers, amongst which five species of *Sequoiæ* were the most remarkable, and the Sago tree, at present confined to the southern tropical regions, abounded, as did also gigantic ferns. In the upper chalk sixty-two species of fossil plants were discovered, of which only five had likewise been found in the lower chalk. The *Salisburea primordialis* (Ginko), now confined to Japan and China, is the most remarkable amongst the conifers, but fully one half of the plants are foliferous. The feruginous clay and sandstone overlying the chalk, and recognized as members of the lower miocene yielded 133 species, of which about fifty have been discovered in the same formation in Europe. They point to a climate similar to that existing in Upper Italy at the present time.

The discoveries made in Spitzbergen, which will be discussed fully in the *Transactions* of the Swedish Academy, likewise prove that a secular change in the temperature of the Arctic Regions has taken place.

We quite agree with Dr. Heer's concluding remark, that researches, such as those carried on by the members of the Swedish Expedition, are more valuable from a scientific point of view than the discovery of new Arctic countries, and regret on this account that no competent geologist will be attached to our Arctic Expedition.

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STATISTISCHE SKIZZE DER OESTERREICHISCH-UNGARISCHEN MONARCHIE, 1847. Von *H. F. Brachelli.* 5th edition. 8vo., pp. 54. Leipzig, 1875. London (Trübner & Co.).

THE numerical statements in our Handbooks of Geography and Statistics are subject to more frequent alterations than the accounts of the physical geography of the different countries, or of the customs and manners of their inhabitants. The publisher of Stein and Wappaeus' voluminous "Handbuch" is therefore deserving the thanks of the numerous possessors of that excellent geographical work by publishing periodically, in the shape of supplements, statistical sketches of the principal states. One of these is now before us. It refers to the Austro-Hungarian Monarchy, and supplies us with the most recent statistics of population, agriculture, industry, commerce, and education, and an account of the constitution and government of that twin-state.

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EGYPTIAN SEPULCHRES AND SYRIAN SHRINES, INCLUDING A VISIT TO PALMYRA. By *E. A. Beaufort* (Viscountess Strangford). London (Macmillan & Co.), 1874.

IN this little volume Lady Strangford presents her readers with an interesting description of the scenes

through which she and her sister journeyed some seventeen years ago in their tour through Egypt, Asia Minor, Palestine, and Greece. In the case of some countries *impressions de voyage* of not very recent date might lack freshness, but the authoress remarks with truth that Eastern life appears never to change its distinctive character, and that in Palestine especially, eighteen centuries have in no way altered the type of scenes and customs which are still mirrored in every page of the Bible. The authoress has a keen and appreciative eye for artistic and scenic beauty, and her activity as well as her graphic powers of description have together enabled her to convey to the mass of English readers who cannot visit them, a varied and yet vivid notion of these Eastern countries.

Cartography.

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W. and A. K. Johnston's Bible Atlas.*

THE *Bible Atlas* prepared at Messrs. A. K. Johnston's geographical establishment, and published by that firm, is a marvel of cheapness, and cheapness, in this instance at all events, is not associated with inferior workmanship, for the maps are neatly engraved, they are elaborately coloured, and printed on good stout paper. Unfortunately this beauty is hardly more than skin-deep, for if we estimate these maps, at their true value, we reluctantly arrive at the conclusion that their intrinsic merit by no means corresponds to their fair outside.

We may at once state that the topographical substratum of the sixteen maps composing this Atlas leaves little to be desired. Our objections are directed solely against the historical and physico-geographical information which it is sought to convey by means of them. One of the principal points to which the compiler of a Biblical Atlas may be expected to direct his attention is the identification of the sites of ancient towns. Yet, no notice has been taken of M. Clermont Ganneau's identification of the Royal city of Gezer; there figures an Ashtaroth and an Ashteroth karnaim, although no doubt exists respecting the identity of these two places; Kadesh is placed in the Arabah, contrary to the testimony of Rowland and Professor Palmer, and Tarichaea remains at the southern extremity of the sea of Galilee, in spite of the convincing evidence to the contrary simultaneously brought forward by De Bruyn and Quandt.

When we turn to the map illustrating the journeyings of the Israelites from Egypt to Canaan, we miss any indication of their attempted invasion of the promised land from the south, which led to their being pursued "even unto Hormah," nor of their having penetrated to Edrei, where Moses defeated king Og of Bashan.

Map V. professes to show the Holy Land as allotted by Joshua to the twelve tribes, and on that point, we should have thought, Joshua himself would have proved the best if not the only authority. We are by no means adverse to independent criticism, if exercised in a good cause, and we freely admit that the Biblical narrative is fairly open, in this respect, to a variety of interpretations. Yet there can be no doubt that Gezer was assigned to Ephraim, that Bethlehem was in the territory of Judah, and that Beth Hoghly, Beeroth, and Ophni lay within the "coasts" of Benjamin. This map, likewise, attempts to distinguish between cities of Refuge, Priests' cities, and Levitical cities. The symbols employed have not been chosen judiciously, but allowing the draughtsman the benefit of every doubt, there remains the fact that Hebron is not indicated as a city of refuge, that Libnath and Anathot, though named on the map, are neither shown as Priest's cities nor as ordinary Levitical cities; that Ain, and Alemeth, though identified, are not indicated at all, and that Rimmon in Judah, is shown as a Priest's city, although that character is bestowed upon it in no portion of the Bible. Amongst ordinary Levitical cities one (Ashtaroth or Beeshterah) is shown on the map, but not as such, and four others (Aijalon, Gathrimmon of Dan, Helketh and Mephaath), though satisfactorily identified, are not shown at all.

Plate VII., entitled the "United (*sic*) Kingdoms of Saul, David and Solomon," though merely showing the extent of the dominions of the latter, ought surely to have preceded the map of the "The Kingdoms of Judah and Israel during the monarchy," seeing that the separation into two kingdoms only took place after Solomon's death. Plate VIII. instead of clearly illustrating the captivities has been made the depository of all kinds of information, from the time of Abraham's migration down to the reign of the Romans.

On the map of ancient Jerusalem Mr. Grove's heterodox positions for Zion and the Temple have been accepted without any allusion to that gentleman's name, and we find there an "Asamonoban Palace" in lieu of a Palace of the Asamonæans. Plate X. contains a fancy sketch of Solomon's Temple, which answers to neither of the three temples described in the Bible, and least of all to that of Solomon. On Plate XI. Archelaus is converted into a Tetrach, his true title having been Ethnarch. On the map illustrating St. Paul's journeys the wanderings of that most energetic of the Apostles are indicated very imperfectly. To mention one instance, Miletus, though undoubtedly visited by him on his third journey (Acts, xx. 15), is not touched by any of the routes laid down there.

The two physical maps are equally unsatisfactory. We do not consider that the tints selected—viz., green for cultivable regions, yellow for sand and gravel, brown for sandstone, red for granite, and white (or rather grey) for calcareous regions—are suited to set forth the physical characteristics of the countries delineated. This question, however, we will waive, as being, for the present, of secondary importance. But we cannot help noticing that on the map of Egypt the whole of the sandstone region has been coloured as being "calcareous," and that the existence of other crystalline rocks, in addition to granite, has been ignored with respect to Mount Sinai. The map of Palestine, quite irrespective of the irreconcilable difference existing between the colours indicated in the reference, and those actually employed on the map, is even less satisfactory, and these two maps show very plainly that their anonymous author has either no knowledge of the physical geography and geology of the countries delineated by him, or is utterly incapable of giving expression to his views in a graphical form.

The last map of the Atlas is on a par with most of the others. It curtails, considerably, the territories of the Greek Church and of the Muhammadans, ignores altogether the existence of the Armenian and Abyssinian branches of the Christian church, and peoples Nova Zemlya and Spitzbergen with pagans, &c., thus raising ice-bears to the dignity of human beings.

Taken as a whole, this Atlas contrasts not very favourably with the Bible Atlas published in 1868 by the Society for Promoting Christian knowledge, for although that

* The *Bible Atlas* to illustrate the Old and New Testament, 16 maps. Edinburgh and London (W. and A. K. Johnston, Geographers: Engravers and Printers to the Queen), 1875. Price 1s.

The *Scripture Atlas*, price 5s. 6d., simultaneously published by the same firm, may be described as an *edition de luxe* of the Bible Atlas, the only essential difference between the two consisting in the addition of an index to the former. The difference in the price, however, is fully justified by the maps of the *Scripture Atlas* being printed on one side of the paper only, and by the binding.

work is not free from blemishes, its twelve plates furnish a far more satisfactory and intelligent illustration of Bible history than do the fifteen plates of the Atlas forming the subject of this review.

Petermann's Map of the Argentine Confederation.*

WE cannot help pleading guilty to a slight feeling of envy when we look at some of the maps brought out by J. Perthes's geographical establishment at Gotha.

Dr. Petermann, assisted by a staff of efficient draughtsmen and engravers, backed up by the liberality of his employer, and supported by an appreciative public in all parts of the world, occupies a most enviable position. He is enabled to bring out maps in numbers and of a quality which render competition on the part of others, less favourably circumstanced, almost hopeless. The map before us, compiled, under Dr. Petermann's supervision, by Mr. H. Habenicht, is a favourable specimen of that kind of work turned out in Germany. It embodies a vast mass of material, the very existence of which had hitherto hardly been suspected in Europe, presents us, for the first time, with an approximately correct delineation of a large portion of South America, and renders obsolete all other maps of these countries published hitherto. It need hardly be said that all published maps, including the Admiralty surveys, Pissis's map of Chili, M. de Moussy's Argentine Atlas, and many others, have been duly consulted; but in addition to these Dr. Petermann was able to avail himself of a valuable collection of manuscript maps forwarded to him by Major Rickard. The accompanying letter-press not only supplies us with information respecting the authorities consulted in the compilation of the map, but presents us likewise with a most valuable essay by Professor H. Burmeister, Director of the Museum of Buenos Ayres, on the physical geography and geology of the country delineated.

Gonzalez's Map of Entre Rios.†

THIS is a very detailed map of the Argentine province of Entre Rios, which differs from Petermann's map as regards some of the telegraph lines and topographical features, especially in the northern part of the province. It shows the position of all the private estates, and by a decree of the 15th September 1873, has been declared the official map of the province, which in 1870 had a town population of 53,547, and a country population of 78,891 souls, who owned 1,908,979 heads of cattle, 380,837 horses, and 3,606,788 sheep.

Waltenberger's Hypsometrical Map of a Portion of the Alps.‡

MR. A. WALTENBERGER, a Bavarian surveyor, has devoted his spare time to an exploration of those portions of the Alps which lie nearest to his place of residence, and by combining these with existing surveys he has been able to produce a hypsometrical map of the Alps, of the valley of the Upper Lech, the Rhaetikon chain and the Silvretta group, lying between the Rhine and the Inn. The map is tinted according to height, abounds in detail, and considerably adds to our knowledge of that portion of the Alps. Smaller maps, one showing mountain crests and valleys, the other illustrating the geology, are added, and the whole is accompanied by an instructive memoir on the orography and hydrography of the country delineated. We learn from this memoir that the mean height of the 1100 square miles shown on the map amounts to 5010 feet.

Delesse's Hydrographical Map of Seine and Marne.*

THIS map cannot fail to prove highly instructive to all those civil engineers who are interested in the drainage of land or the supply of water. It shows in an exceedingly perspicuous manner the distribution of surface and internal reservoirs of water, distinguishing those formed on various descriptions of impermeable clays, and those due to infiltration through permeable strata. It likewise shows all wells throughout the department, classifying them according to whether they are of the ordinary description, or obtained by borings or sinking, and giving, in every instance, the depth of the well, the supply of water furnished by it, and other valuable information. Lands artificially drained are likewise shown. On a marginal map we are presented with a general view of internal drainage, and on another shows the hypsometrical features of the country. A comparison of these two small maps is particularly interesting.

E. G. RAVENSTEIN.

Correspondence.

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THE OGHUZ TURKS.

To the Editor of the "GEOGRAPHICAL MAGAZINE."

DEAR SIR,—Lepechin and Radloff have thrown a great deal of light on the history of the nomadic Turks, and especially on that of the Kirghiz Kazaks. They have mainly the credit of having discriminated between the Kirghises properly so-called, and the Kirghiz Kazaks who are properly styled Kazaks, and have in consequence disentangled a very crooked web in the ethnography of Asia; but they have not exhausted the subject, and I propose somewhat to extend their conclusions. The history of the Kazaks since the supremacy of Jingis Khan is now tolerably well made out, and I hope to treat it in some detail in a work I am engaged upon.

On the division of the empire of Jingis, the western portion of his conquests was apportioned to his eldest son, Juji. The clans over which he ruled were collectively known as the Golden Horde. The Golden Horde was itself divided into two sections, the Ak Orda, or White Horde, with its capital at Sighnak, governed by Orda, the eldest son of Juji and his descendants, while the Kokorda, or Blue Horde, ruled by Batu Khan and his descendants, had its capital at Serai. The Kazaks formed a part of the Ak Ordi, or White Horde, and their chiefs are descended from Borak Khan, a distinguished ruler of that horde in the 14th century,

* Mapa original de la Republica Argentina, y Estados adyacentes comprendiendo las Republicas Chile, Paraguay y Uruguay, por el Doctor Don A. Petermann. Scale, 1,400,000. (Mittheilungen, Ergaenzungsheft, No. 39). Gotha, 1875.

† Carta topografica de la Provincia de Entre Rios, con la demarcacion de Terrenos de Particulares, compilada y construida por Meliton Gonzalez. 1:1,000,000. Buenos Ayres, 1873.

‡ Die Rhaetikon Kette, Lechthaler und Vorarlberger Alpen von A. Waltenberger. (Petermann's Mittheilungen, Ergaenzungsheft, 40.) Gotha, 1875.

* Carte hydrologique du Département de Seine-et-Marne, éxécutée par M. Delesse, conformément aux déliberations du Conseil-Général, 1864-73. Paris, 1874.

The history of the Kazaks *before the days of Jingis* is singularly obscure, indeed, if we are to follow the standard authorities, it is absolutely unknown. Nor shall we make much way in tracing it unless we find out the name under which the Kazaks were then known, for it seems clear that the name Kazak is as ambiguous as it is probably modern. I do not see my way to this goal by following the notices contained in western histories, and look rather to the Chinese accounts to throw some light on the matter. Now the name by which the Kazaks are known to the Chinese is Hakas. This may be amply verified in the Chinese accounts of the Emperor Kienlung's campaign in Sungaria, and in the account of the return of the Torguts to the country of Ili in the beginning of the last century, in both of which the Kazaks appear very prominently, and in both of which the name of Hakas connotes exactly the same thing as the Western name Kazak, for we have detailed Western accounts of these events as well as Chinese. Now it is an important fact that while Kazak is such a comparatively modern name, Hakas is a very old name, one that occurs in Chinese history long before the time of Jingis Khan. The Chinese accounts wherever I have been able to test them are singularly reliable, and the Chinese names of tribes are generally the indigenous names altered to meet the peculiar sounds of the Chinese language, but altered in a very definite way. Now, on examining the name Hakas from this point of view, and trying to find a Western equivalent for it, we are immediately struck by its resemblance to the name Oghuz. The two names are so alike that it is very surprising to me that it has never been before suggested that they are identical, and not only the names, but also the people. The Hakas are Turks so were the Oghuz; the Hakas are pre-eminently the Turks of Turkland, of the Altai, and the steppes west of Lake Balkash. It was from here the Oghuz Turks came. The Hakas, or Kazaks, are divided into three hordes—the Great, Middle, and Little Horde. Maçudi tells us that Oghuz Turks were also divided into three sections—an upper, middle, and lower *(D'Ohsson's les Peuples du Caucase*, 146*)*. Thus everything combines to make the identification complete. Nor do I know of a single argument against it. Now, this is a very important point gained in tracing out the history of the Turks, for it enables us to say that the Oghuses of the Arab writers, who desolated Persia so terribly before the days of Jingis Khan were the direct ancestors of the modern Kirghiz Kazaks, a perfect continuity existing in their histories. This, again, enables us to throw light on another point of Turkish history, which in its turn confirms very singularly the conclusion we have just arrived at.

Among the tribes against which Jingis Khan fought in his early days, one of the most powerful was that of the Naimans, which occupied the northern part of Sungaria, from the little Altai to Karakorum. Erdmann, D'Ohsson, and others, have argued that they were Turks, and in a paper upon them, which I wrote in the *Phœnix* some time ago, I collected the evidence which makes it almost certain that they could have been nothing else than Turks. Not only were they Turks, but, as I believe, they were identical with the Naimans who still form such an important section of the Middle Horde of the Kirghiz Kazaks. That they, in fact, were then the predominant tribe of the Kazak confederacy, and gave it its name. Now at the accession of Jingis, Karakorum, the celebrated capital of the Mongols, was within the territory of the Naimans. Thus, Abulghazi says, speaking of the Naimans—"They had their camp in the place called Karakorum in Mongolia" *(Abulghazi, ed Desmaisons*, ii. 47). The name Naiman, which simply means eight, does not occur, so far as I know, as a tribal name in history before the days of Jingis, but Karakorum does. When Ogotai Khan began to build his capital at Karakorum we are told that it was among the ruins of an old city. Among them a pillar was found with an inscription upon it declaring that on that site Buku Khan, the chief of the Uighurs, had, in the 8th century, built his palace, and that it had been the residence of his successors. Karakorum was, in fact, the capital of the old Uighur Empire. This empire was overturned in the 9th century by an invasion of the Hakas, who had lately become very powerful. The account may be read in detail in the annals of the Thang dynasty, published among the Jesuits' Memoirs on China. The Uighurs were driven away, and migrated to the south-west, to the country of Bishbalig, while the invaders took possession of their land. At this time the Chinese accounts cease for a while to give us any light on their northern neighbours. When the curtain rises again in the days of Jingis, we find Karakorum the old Uighur capital in the occupancy of the Naimans whom we have just shown to be Kazaks or Hakas, that is in the possession of the descendants of the very folk who had wrested it from the Uighurs. This fact rounds our story off remarkably, and makes our conclusion almost certain. I have more to say, but shall postpone it for another letter.—Yours, &c.,

HENRY H. HOWORTH.

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THE ETYMOLOGY OF "TURKMAN."

To the Editor of the "GEOGRAPHICAL MAGAZINE."

SIR,—Your correspondent (see April number, p. 118) is quite right in not agreeing with the Persian or Oriental etymology of the word Turkman. *Manend* or *menend* (meaning like) can with difficulty, if ever, be contracted into *men*, coming, as it does, from *mānden* (to remain, to resemble), and not from *menden*. "Resembling Turks" is, too, a most awkward and unsuitable denomination for a people which is distinguished by comparatively pure Turkish ethnographical features,

But if Mr. Howorth rejects the etymology of Rushiddin and Mirkhond, he does not do well to accept the pious Muhammadan etymology of Neshri, who, in spite of being one of the earliest Ottoman writers, has but very little notion of the true spirit of the Turkish language. For, even in his day, the word *Türk* was analogous to *raw, uncultivated*, just as the word *Oguz*, from which came the word *oguzane (boorish, thick-headed)*, and *oguzluk (coarseness)*. Neshri's etymology is entirely based upon Muhammadan devotional feeling, and is quite a linguistic impossibility. *Türk iman* are two separate nouns, which cannot be composed by an ezafet. We can say, for example, *din-i-ingiliz* or *iman-i-turk* (the faith of the English, or the faith of the Turks), but not *ingiliz-i-din* or *turk-i-iman*. Finally, it must not be forgotten that the name the Nomads themselves adopt is *Türkmen*, and Turkman is applied to them only by the Persians.

My own opinion of the origin of this word has been expressed in my *Travels in Central Asia*, p. 301, and I still adhere to it. *Men*, a generalising suffix, corresponds with the English terminations *dom*, *ship*, and may be found in many other words, such as *kölemen* (slaveship), (the Turkish name for Mameluks, *memluk* means in Arabic a slave), *alakman* (a company of robbers or riders), *alak* (robber), &c. Turkmen signifies therefore a congregation of Turks, viz., the Turks, *par excellence*, in opposition to the generic and more recently adopted names of Ozbeg, Kazak, Kirghiz, &c.

Yours, &c.,

A. VÁMBÉRY.

THE UNIVERSITY, BUDAPEST,
15th April, 1875.

Log Book.

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Arctic Appointments.—The advantages of a Government over a private Arctic Expedition certainly outweigh the drawbacks, and this was clearly perceived by the Geographical Society in advocating, and at length securing, the despatch of the Expedition. One of the most serious drawbacks is the danger of jobbing the appointments, and of yielding to the crotchets of irresponsible persons and newspapers. This danger has proved to be more real than was expected, and its most recent phase has appeared in an unforeseen shape.

The Arctic Committee, after much deliberation and thought, recommended the proper staff of officers and men for the Arctic Expedition. But the complement, thus wisely and carefully laid down, has been altered by the addition of "Idler" after "Idler" by the Admiralty, to the exclusion of valuable executive officers whose loss will seriously impair the efficiency of the enterprise. The last alteration has been the appointment of two chaplains to the exclusion of two assistant paymasters, whose duties are most important. This has been done in defiance of the opinions of the Arctic Committee and of every experienced Arctic officer, and without considering the wishes of the officers and men in the expedition. There are other special reasons against these appointments. No ship in the service with less than 170 men has a chaplain, while the Arctic ships will be absent for a shorter time than the usual commission of three years. Moreover, the crews of the Arctic ships consist of Roman Catholics, Wesleyans, and Presbyterians, besides Church of England men, and the introduction of an element of discord is much to be deplored. These additional "Idlers" will consume provisions, entail a useless expenditure of several thousands, take the places of men who can ill be spared, and will come between the captain and his men in the performance of one of his most important functions. The latter evil is a most serious one. The commander of an Arctic Expedition reads daily prayers, performs divine service on Sundays, attends, with his officers, to all the needs of his men; and these ministrations have an important influence on the well being of the expedition by uniting all in a common bond of sympathy and fellowship. Men of all denominations cheerfully attend the ministrations of their captain—the leader who shares all their toils, and to whom they look to lead them to success and to bring them safely out of danger. Those who have served in the Arctic Regions know how valuable and important is this religious bond, and how mischievous will be its wilful severance by hampering the expedition with chaplains. The injury thus done to the expedition, apart from that of saddling it with unneccessary idlers who consume provisions and deprive it of the services of valuable officers, is certainly most serious.

Blasting the Ice.—At page 71 of our March number we referred to the valuable aid afforded by blasting with gunpowder, both in forcing a way through the ice, and in cutting out of winter quarters. In former expeditions ordinary black gunpowder was used in charges of 5 to 10 lbs. in tin canisters with Bickford's fuze. Since then gun-cotton and cotton gunpowder have come into use. Gun-cotton is objectionable owing to danger in stowage, uncertainty in explosion, being liable to misfire, and requiring to be dried before use. But the new cotton gunpowder is free from all these objections, while it is superior to the Government gun-cotton in power and cheapness. The advantages which cotton gunpowder has over ordinary black powder are numerous. It is a much more powerful explosive, its proportionate strength to common powder being as eight to one, and it is perfectly safe. If put into the fire it will burn quietly without any explosion, nor will it explode on concussion. The explosion can only be produced by the use of a special detonation. Yet, in the face of these facts, the Admiralty have refused to allow this admirable auxiliary in ice navigation to be used, and have ordered a supply of Government gun-cotton to be sent out, together with the old-fashioned charges of black gunpowder in bulky canisters.

The Swedish Arctic Expedition.—This expedition will be despatched entirely at the expense of M. Oscar Dickson of Gottenburg, and will be under the command of Professor Nordenskiold. Two botanists will be attached to it, Dr. F. Kyellmann, who accompanied the Spitzbergen expedition in 1872-3, and Dr. N. Lundström, both gentlemen being graduated professors of the university of Upsala, two zoologists and a dozen Norwegian whaling seamen. It is proposed to start from Tromso in the early part of June on a whaler specially chartered for the expedition, and to make for the south of Novaya Zemlya, whither Samoyedes resort during the summer months. Here some time will be spent in geological, botanical, and ethnological investigations, after which, should the ice prove favourable, they will coast along the west of Novaya Zemlya, double its northernmost point (presumably about the middle or end of August), and push on in an easterly direction to the mouths of the Ob and Yenisei, a region which is known to be rich in mammoth bones, and other prehistoric remains. If navigation should still be possible the vessel will return to Tromso by way of the Matochkin Shar or straits of Kara, and Professor Nordenskiold will ascend one of the two Siberian rivers mentioned, and return overland. The expedition is intended to be purely a summer one, but it will nevertheless be provided with provisions for fourteen months. A few years ago such a project would have been considered impracticable, but recent voyages of Norwegian whalers, among whom should be mentioned Captain Johannessen, who by his circumnavigation of Novaya Zemlya has gained the gold medal of the Swedish Academy of Sciences, have proved that the difficulty of navigating those seas is not insuperable.

The Seal Fishery.—The Dundee vessels have returned from the sealing at the edge of the ice, and report it to have been the poorest that has been known for years. The new 'Arctic,' commanded by Captain Adams, made the ice in 72° 30′ N., and afterwards went as far as 74° N., without seeing any seals, and he learnt that all the other vessels had been equally unsuccessful. At last, on the 5th of April, when in company with three other steamers, they came upon a large patch of seals, and the slaugh-

ter continued for three or four days, after which scarcely any remained alive. The 'Arctic' killed 13,000 seals (130 tons of oil), the 'Polynia' 4500, and the 'Ravenscraig' 4000. In returning the 'Arctic' had to bore through 150 miles of young and old ice, and reached Dundee on April the 18th. But most of the steamers returned "clean," that is without any seals; and the necessity for establishing a close season has become more pressing than ever. There were no less than thirty-nine foreign vessels without a seal. Last year the value of the seal fishing was computed at 30,600*l.*; and this year it is not expected to be 15,000*l.*

Obituary.—KARL MAUCH, the German traveller, died on the 4th of April, at Stuttgart, from severe injuries received through a fall from a window, and after eight days' intense suffering, aged thirty-eight years. The deceased had devoted several years of his life to the exploration of the country between Natal and the Zambezi, and it is to him we are indebted for the discovery of extensive gold-fields, and of the remarkable ruins of Zimbaoe. The results of these travels have been published in Petermann's *Mittheilungen*, but up to the day of the fatal accident which terminated his life Mauch was engaged upon a more comprehensive account of his labours.

WINWOOD READE.—Mr. Winwood Reade who died on Saturday last, the 24th of April, in his 37th year, is known to geographical science chiefly as an enthusiastic African traveller. He visited the West Coast for the first time in 1862-63, and again in 1868-70, when he penetrated into the interior from Sierra Leone, and established friendly relations between the Government of that colony, and the native powers to a distance of 450 miles from the coast. He fixed the source of the Niger, which rises in the same family of mountains as the Senegal and Gambia, and discovered a new route from Sierra Leone to the Niger. His name is also known for several interesting works of travel, such as *Savage Africa*, *The Martyrdom of Man*, and the *African Sketch Book*. His early death is much to be deplored, in so much the more as it was due to physical enfeeblement incurred while accompanying the Ashantee expeditionary force as special correspondent to the *Times*.

An Universal Catalogue of Geographical Works.—We beg to draw the attention of our readers to a most excellent classified list of recent geographical works, papers and articles, drawn up by Herr Koner in the last *Zeitschrift* of the Berlin Geographical Society. The list is framed somewhat in the style of our own and Dr. Petermann's "Table of Contents" in the *Geographical Magazine* and *Mittheilungen* respectively. Every contribution to geographical knowledge which appeared during the year ending November, 1874—be the language what it may—appears to have been faithfully recorded. Such a catalogue is a much needed want, and if its author would endeavour to work *backwards* as well as forwards, and make the catalogue, in process of time, one for all ages, he would achieve a most valuable work. As it is he will deserve the gratitude of all geographical students.

Proceedings of Geographical Societies.

ROYAL GEOGRAPHICAL SOCIETY.

Meeting of March 22nd, 1875.

BRITISH BURMAH AND WESTERN CHINA.

THE PRESIDENT, SIR HENRY RAWLINSON, took the chair at 8.30 P.M. The paper of the evening was "Trade Routes between British Burmah and Western China," by J. Coryton.

Ever since the opening of the canal at Suez, the question of a direct road from the Bay of Bengal to Western China has been receiving increased attention. The revolution achieved by the use of steam, now in general use in Eastern waters, has rendered us impatient of delay in travel; the merchants of India and Indo-China declare their ports to be suitable emporia for China trade, and merchants at home listen willingly to any schemes by which the dangers of the China seas are to be eliminated from their calculations. Although the subject in this form has but recently attracted the attention of the public at home, the Government of India has, for the last half century, omitted no opportunity of gaining an insight, through actual inspection by competent officers, into the disposition and resources of neighbouring States, and the facilities afforded by the formation of the country for the establishment of routes which should "tap" Western China.

In the absence of regular surveys of the country it is proposed to cross, we must still rely on history for our conviction that no obstacles arising out of the physical conformation of the country exist. For five centuries, if we can credit the chronicles of Ava, trade was maintained between Burmah and China by way of Bamó, and enormous armies have from time to time swept, in their career of devastation, along the very tracks we are hoping to see traversed by caravans of traders. Our ignorance of the physical character of the broad belt of country we are desirous of traversing is therefore of small moment, and our maps give us, no doubt with sufficient accuracy, the position of the leading mountains, rivers and towns. It is our ignorance of the political status of the population we have to deal with that constitutes our real hindrance, and has hitherto caused the failure of our attempts.

Now it so happened that it was my duty for some years to speak with authority—I will not say with confidence—on this very subject of the geographical boundaries of States adjacent to British Burmah In the Court of the Recorder of Moulmein, suits were continually before me involving rights to timber felled on the banks of the Salwín, far above British jurisdiction. Each party claimed to have acquired his rights by purchase from the Forest Chief. Finding the difficulty in which I was left from all official recognition of neighbouring states embarrassing, I stated a case for the opinion of the High Court of Calcutta, and the opinion of that Court was that I was bound to determine, as a fact, who was sovereign in the locality in which the timber had grown. The result of having to take judicial cognisance, for this purpose, of the petty skirmishes constantly occurring in the forest districts where the rudest state of society prevails, was, as may be supposed, occasionally absurd. As a rule it would be difficult to define these petty sovereignties more exactly than by saying that the chiefs admit in every case some sort of allegiance either to China, Burmah, or Siam, and, as was evident from the careful records of the exploration on the Mékong in 1868, not unfrequently to more than one at the same time.

There is one characteristic of the people inhabiting the belt of country we are considering, which tells either in favour of or against our scheme in precise proportion

as the country is tranquil or disturbed. I refer to their love of a wandering life, which makes of the Shan an admirable trader when law and order are prevalent, but a very unpleasant neighbour in cases where the country is unquiet. One of the great objects of our Government in Burmah has been to counteract this restless spirit; and in his last report, the Chief Commissioner of British Burmah notices with satisfaction the fact that the hill-tribes of Northern Aracan had been undisturbed by the raids of trans-frontier tribes during the year, and that the condition of the tribes within our territories had continued to improve, in consequence of the comparative quiet there existing.

Mingled with the motley population of Shans, in the belt of country south-west of Yunan, is one element of which we may regard the increase in the neighbourhood of Bamó and Mandalé with great satisfaction. I refer to the Chinese, who, having left their country as emigrants from the Eastern ports, have gradually established themselves as coolies, cultivators, and traders along the coast of the Malay Peninsula from Singapore to Rangoon, and so up the Irawadi to the very spot to which we are hoping their brethren will come overland to meet and trade with them.

To the obstacles arising out of this political chaos existing outside Western China, we may add the utter disruption of society within it, the consequence of civil war. In 1855 the Province of Yunan rose in rebellion, and sustained its independence under a Mussulman governor until 1873. During the period of this rule, bands of marauders, under petty chiefs, devastated the country on the frontier, and harried the few unfortunate traders that crossed their path to an extent which threatened to annihilate all trade.

If Tali, the citadel capital of Western Yunan, to which almost all the routes converge, be, as has been supposed, the Yachi of Marco Polo, the character and religious belief of its inhabitants have been for centuries in opposition to that of the rest of China. Writing in 1595, he describes them as a mixture of "idolatrous native, Nestorian Christians, and Turks." During the last few years of Sultan Soliman's independence, Tali was the centre and key of the rebel power. Soon after the outbreak of the rebellion, the Musulman troops attempted to push their successes southwards, but met with a repulse from the Tsaubwa of Kiang-tong, and retreated, laying waste the towns of Esmok and Yunan Sen. For ten years the rebel power was confined to the northern portion of Yunan. It was at this time, just as fresh exertions were being made to extend it southwards, and we ourselves were prepared to believe that the rule was permanently established, that it suddenly collapsed.

Mr. Coryton then enumerated the various routes which have been attempted or proposed, with a view to developing the resources of Yunan and shortening the transit of goods from thence to Europe. As this very subject, however, was dwelt upon by Colonel Yule, in his article "Trade-routes to Western-China," in our last number we will do no more than specify the routes referred to by Mr. Coryton. These were:—1. Cooper's project for entering Tibet from the Brahmaputra. 2. From Sudaya on the Brahmaputra to Bamó. 3. Route from Calcutta to Bamó *viâ* Munipur. 4. Akyab route to Mandalé. 5. The Irawadi route to Rangoon. 6. Sprye's route from Rangoon to Kiang Hung. 7. Route through Toungoo to Rangoon by canal and rail. 8. Various routes starting from Moulmein. 9. The valley of the Menam. 10. The Mekong or Cambodia River. 11. The Songkoi or river of Tong-King. 12. The Sikiang, and 13. The attempts from Shanghai to march directly westward on Talifu and Bamó. With reference to the extent of the present trade, Mr. Coryton made the following remarks:—

The extent of the trade that now actually exists between the seaports of British Burmah and the interior will, I think, surprise those who are not acquainted with the subject by personal inspection. I was assured by one of the leading native merchants of Moulmein, that the value of the piece-goods, with which our hardy visitors, the Shan pedlers, trudge back to their homes yearly, is not less than a lac (10,000*l*.), while respectable Surattee merchants had assured me that it rarely falls below 30,000*l*., or two-thirds our entire imports of this class. The amount varies, no doubt, within large limits. Under favourable conditions, that is to say, when tranquility prevails upon our frontiers, it attains considerable dimensions, while disturbances have an equally powerful effect in the opposite direction. It is extremely difficult to obtain anything like trustworthy statistics with reference to the primitive trade thus carried on, the traders being apprehensive that if their profits were known to the Government, they would be subjected to taxation. The number of Shan residents, both in Rangoon and Moulmein, is very large, augmenting and decreasing in proportion to the tranquility of the times. The numbers stood for Moulmein as high as 4859 in 1865. Owing to the troubled state of the adjacent territory of Karennee, it fell shortly after to 966.

Mr. T. T. COOPER said that from Burmah to China *viâ* Bamó, the trader has to cross three large watersheds, those of the Salwín and the Cambodia. The country is extremely mountainous, and but sparsely inhabited by semi-barbarous tribes, who have not a very keen appreciation of the blessings of civilisation following on trade, but are nevertheless somewhat given to a little peddling. Mr. Coryton had omitted one point of great importance in dealing with the question of the trade-routes. To warrant any expectation of a large trade, a numerous population is necessary; but although the province of Yunan is undoubtedly rich in minerals, the soil fertile, and the people industrious, internecine warfare has so diminished their numbers, that at the present time grass and ruin may be said to cover the luxuriant soil of the country. Hereafter, when the great vitality, which is characteristic of the Chinese, shall have had time to assert itself, and emigrations shall have taken place from the north-eastern provinces to the more fertile west, trade may be expected to arise between Burmah and Yunan. He did not, however, believe that this would happen during the present generation. The geography of the country between Manwain and Bamó is very interesting. The mighty rivers which flow through the wall-like mountains, and the hills which afford a habitation to the semi-barbarous tribes, are very beautiful. The flora of those hills is purely tropical, the bamboo being most conspicuous. In the higher altitudes, however, many English shrubs and trees are found, such as the gooseberry, the strawberry, and the oak. The fauna is peculiar to those hills. There are animals there which are to be found in no other parts of the world, the most conspicuous being the Takin, belonging to the deer family, and the Mhitton, a sort of wild cattle, somewhat resembling a cross between the buffalo and the bull. Mr. Coryton, probably inadvertently, referred to the Shans as a barbarous people; but they have a literature probably as ancient as that of the Chinese themselves. They were the people who first forged the link of trade between China and Burmah. They, however, were to blame, for having introduced the poppy from Burmah into China. Until they introduced it to the Chinese merchants who visited Yunan annually, poppy cultivation and consumption was unknown in the west of China.

Sir GEORGE CAMPBELL said the country had sustained a great misfortune in the loss of that enterprising and excellent young man, Mr. Margary, while he himself had personally to deplore the death of Lieut. Holcombe, who had fallen, with forty other British subjects, whilst engaged in the exploration of the country between Assam and Burmah. As Mr. Coryton had said, the routes from Assam to Burmah were of only secondary interest until free communication was established between Bamó and China. What Mr. Cooper had said of the depopulated state of Yunan, showed how advis-

able it was to direct attention at present chiefly to the more northerly route, by which direct communication might be obtained with the large and important province of Sze chuan by way of Batang. The late Duffla Expedition had obtained considerable information with regard to the hill-country to the north of Assam, but the tribes there were very barbarous. The route by the Mishmi country was so far well known, that only political obstacles now intervened to prevent direct communication between Assam and Batang, and through Batang with China. Of late years a very much greater intimacy than formerly existed, had sprung up between the English and the frontier tribes, and the Mishmis had become amenable to British authority to a great extent, so that there would be no serious difficulty to encounter in sending travellers through their country, if the Chinese would only let them pass on the other side. The policy of the Chinese was that of civil exclusion; but if through the influence of the British Resident at Peking, or in any other way, permission could be obtained from the Chinese for travellers to enter by the Mishmi route, a communication could be established with the province of Sze-chuan.

Sir RUTHERFORD ALCOCK thought there were many cases in which it was impossible to separate geographical from political considerations, and the question of a trade-route between India and China was just such a case. Sir George Campbell had justly said that, as regards access to the richest and wealthiest part of China, Szechuan, through the Mishmi country, the difficulties presented by the physical character of the country were as nothing compared with those caused by the exclusive policy of the Chinese, and their determination, so far as England was concerned, to prevent entry into their country except by the seaboard. There could be no doubt that, quite consistently with international rights and law, England could say to the Chinese Government, "We have a treaty of amity and commerce with you, by which we have free access to the interior of your country from the seaboard; and it is an act of hostility on your part to peremptorily forbid us access from every other direction." This was a ground of complaint which might be very fairly taken whenever Her Majesty's Government thought the time was come to press their rights. The late tragic incident only showed with greater certainty, if such proof were needed, that both on the part of Burmah and of China, there was a decidedly hostile animus, and a determination *per fas aut nefas*, by force or diplomacy, to prevent England from gaining any fresh access into the interior of China, or opening any trade-routes in that direction. Mr. Margary was personally known to him (Sir R. Alcock), and there was no more promising officer in the Consular service. Everyone who knew him must lament that he should have fallen in what was a perfectly hopeless effort, under present circumstances, to penetrate through the hill tribes occupying the border lands between Burmah and China. Those tribes recognised the authority of China, Burmah, or Siam, whenever they were in danger of punishment, but at other times they were independent of all control; and it would be as difficult to hold Peking responsible for anything they did, as to show that Burmah had any direct action in the unfortunate events that had taken place. During the last twenty years a great deal had been said about the importance of opening trade-routes between Burmah and China; but the tragic incidents which had occurred showed that the British Government, as an Asiatic power, should be very careful how they entered upon such expeditions. In other countries it might be advisable to risk valuable lives for an adequate object, if failure merely meant the failure of that particular enterprise; but England could not afford to risk a failure among Asiatics. Our empire there was an empire of prestige, and it was absolutely essential that we should not accept defeat, or permit a rebuff. He could therefore well understand the reticence that had been shown by successive Governments of India on these matters. If the merchants and pamphleteers who were so eager to urge on the Government to these risky explorations, would regard the difficulties in the proper light, they would not be so ready always to blame those who hesitated before undertaking such expeditions.

The PRESIDENT agreed in the main with Sir Rutherford Alcock's remarks, but not entirely. England must risk something, and, on the whole, both from feeling and experience, he would rather be over-risky than over-cautious. No doubt there were serious considerations to be taken into account, and it behoved a Government to feel its way as much as possible; but he could not feel at all dispirited or discouraged by what had taken place recently. No doubt the loss of Mr. Margary was a very melancholy affair, but the Chinese Government had accepted the mission, and given every facility in their power for its passage through the country. Mr. Margary had actually passed through the length and breadth of China by the very same route which the mission was to follow subsequently. Some of his letters written by him after his arrival at Bamó had already been published in the *Times*, and in the last letter, dated January 17th, after he had apparently passed throughall his dangers, and had joined Colonel Browne's party at Bamó, he expressed the greatest joy at the happy result of his journey. It was very sad to reflect that within a week of that time he was no more, and everyone must sympathise with his bereaved family, and deplore the irreparable loss which not only they, but the public service had sustained. With regard to the trade-routes, although those to the east might be the easiest available for commerce, still they could never compete with those to the west, because these latter avoid all the dangers of the Chinese seas to which the eastern routes are exposed. At present the French had two routes at their disposal, one from the north of Tong-King up the Songka River, and the other from Saigon up the Cambodia River; but after arriving at the embouchure of either of those rivers, the trade would have to encounter the danger of the Chinese seas. The essential object must be to start from the Bay of Bengal, and therefore the great question was whether the route should be by the Irawadi or the Salwín. Mr. Coryton had stated that the Salwín is not navigable; consequently, until a railroad was formed in that direction, that route was out of the question. At present the Irawadi, however, could be ascended by steam-boats without any difficulty as far as Bamó, and from there to Mômein, the key of Yunan, the distance was only 120 miles. Major Sladen calculated that it could not be more than 130 miles by a circuitous railway. That route accordingly appeared to be the most practicable; but, on the other hand, the tribes inhabiting the Kakhyen Hills were exceedingly troublesome and difficult to manage. Major Sladen had sufficient experience of them formerly, and probably the death of Mr. Margary would be traced to the same source. In the mean time all that could be done was "to labour and to wait." It would of course be injudicious to press matters to an undue limit, but a certain pressure ought to be kept up by public opinion, without which all governments were apt to go to sleep.

Meeting of April the 12th, 1875.

WESTERN AUSTRALIA.

Sir HENRY RAWLINSON took the chair at 8.30 P.M. The first paper was a "Journey across the Western Interior of Australia from Murchison River to Peake Station," by John Forrest, F.R.G.S., who with his party left Champion Bay on the 1st of April 1874, to examine the heads of the Murchison and the Gascoigne, and also to try and discover any territory which might tend to the good of Western Australia. After undergoing terrible hardships owing to the scarcity of fresh water, and the wretched barren state of the country, Peake Telegraph

Station was reached on the 28th of September. This six months' journey is a continuous record of sandhills, covered scantily with spinifex grass and little or no water, and nothing was discovered to warrant the belief that settlement can be extended in this direction. In longitude 127° a much better country was entered; and if the season had been different, even with the wretched spinifex desert through which they passed, it is believed the expedition might have got farther north; but all attempts were unavailing, and at last a return journey was made. In latitude 26° 11', longitude 128° E, where there was a most splendid spring, many hundreds of natives were seen, and they were very numerous in the worst spinifex country in which much game existed. Mr. Forrest and his party were attacked by the natives three times, and they were compelled to fire on them in order to drive them off.

The PRESIDENT explained that the paper just read was only a very brief summary of Mr. Forrest's account of his journey. The detailed journal and map would be published in the *Journal* of the Society. A letter had recently been received from Mr. Forrest, stating that he was on his way to England and would arrive in the month of May, bringing his journal and map with him. He had performed a very extraordinary journey under great difficulties, and, although he had not succeeded in finding any land available for sheep-runs, or other colonial purposes, he still deserved very well of the Geographical Society and of all lovers of geography, for having been the first to traverse that part of the Australian Continent. It was something, at least, to discover that the country was not available for agricultural or pastoral purposes, because that would save further attempts at explorations in quite an impracticable tract.

Sir GEORGE BOWEN (Governor of Victoria) said, as an old Fellow of the Society, he was very much gratified at finding himself once more at one of the Meetings. He had been sixteen years absent from England as Governor, first of Queensland, then of New Zealand, and now of Victoria. Victoria was the smallest in size, but the most important and richest of all the Australian colonies, having a revenue of 4,500,000*l.*, which was much larger than that of the kingdom of Portugal, twice as large as that of Denmark, three times as large as that of Saxony; a revenue, moreover, which was raised only in a small degree by taxation. It was derived chiefly from the public lands, and from the State railways and waterworks. The taxation was only about the same sum per head as in England, namely, about 2*l.*; and of the money actually raised by taxation one-third was spent on public education, including not only primary and secondary schools, but the University of Melbourne, and schools of mines, schools of design, schools of art, and other literary and scientific institutions. When he last had the honour of dining at the Geographical Club, and attending a meeting of the Society sixteen years ago, just before he went to Queensland, his late lamented friend, Sir Roderick Murchison, was in the chair. He congratulated the Society on seeing the chair now filled so ably by a statesman as well as a geographer. He had never been in Western Australia, except when he touched King George's Land in the steamer in passing to and fro from England, but the two Messrs. Forrest dined with him at Melbourne just before he left. They were in perfect health and condition, in spite of all the hardships which they had undergone, and they were both in earnest hope of the recognition which they were now receiving from the Royal Geographical Society. He had had no personal experience of the interior of Western Australia, but he was for eight years Governor of Queensland; the position of which, on the East Coast of Australia, corresponded with the position of Western Australia on the West Coast. He went to Queensland as the first Governor of the colony in 1859, and Sir Charles Nicholson went with him as first President of the Council. On his arrival he found the large and munificent sum of 7*d.* in the public chest; and some thief, supposing, perhaps, that he had brought with him a sum of money to the colony, broke into the chest, and stole the 7½*d.* the first night he was there. During his eight years' administration in Queensland, that sum of 7½*d.* swelled into an annual public revenue of 800,000*l.* When Sir Charles Nicholson and himself first went to Brisbane, the only settlement between Brisbane and the Gulf of Carpentaria was Rockhampton, about 500 miles to the North of Brisbane; but, at the present time, there were settlements the whole way to Cape York, 1200 miles to the north; and he hoped that Western Australia would similarly progress. Of course Western Australia had not the same great resources in arable land, in land fit for sugar and for cotton, and in gold-fields, which Queensland possessed; but still Western Australia might follow the example of Queensland, and he hoped that, fifteen years hence, some Governor of Western Australia would be able to give as good an account of the progress of that colony as he himself was able to give of the progress of Queensland. People must not be deterred by the unpromising appearance which the interior of Australia presented to a first explorer. There was a time when everybody said that Queensland was too hot for sheep, and now there are 11,000,000 of sheep in the colony. They must not, therefore, jump to the conclusion that, because a country appeared unpromising, sheep would not flourish there. In Queensland the flow of pastoral occupation had gone on almost like the flow of the tide. At the end of every year some 200 miles had been added to the domains of Christianity and civilization; and in the course of five or six years pastoral occupation had spread over the whole of that vast territory, three times the size of the French empire. Such were the triumphs of peaceful progress. They were triumphs in which Englishmen might well rejoice, for they were victories without pain or bloodshed. Their conquests were not only over men but over nature: not for England only, but for all the world; not for this generation simply, but for all posterity.

Mr. LEAKE (Speaker of the Legislative Council of Western Australia) said he had on the previous Saturday received a letter from Mr. John Forrest, dated from "the high seas of Bombay," in which he said, "To-morrow I hope to land there, and I am on my way to England. I shall, therefore, travel through Egypt, staying there about a week, but I hope to be in England very nearly as soon as this letter." Mr. John Forrest was a native of Western Australia, and when he arrived in this country he (Mr. Leake) hoped to be able to give him the benefit of his own three weeks' experience in England. When he heard that Mr. Forrest was so near this country, he called upon the Geographical Society to inform them of the fact, and he had hoped that it would have been his privilege and honour to introduce Mr. Forrest to the Society.

EASTERN AFRICA.

Sir HENRY RAWLINSON said that the second paper, entitled "Journey from the Pangani, *viâ* Wadigo, to Mombasa," was by the Rev. Charles New, who was well known to the members, but who had, he regretted to state, lately died.

Dating from Mombasa, East Africa, Sept. 3, 1874, the Rev. Mr. New stated that he had accomplished a journey from the River Pangani through Usambara onwards, by way of the Wasegeju and Wadigo to Mombasa. The Pangani is a large body of water, with low but fertile banks, which the Arabs and Wasuahili are cultivating on both sides, and, of course, by slave labour, any number of slaves being easily procurable. The Pangani cannot be ascended above Tongue on account of falls, which are reported as being very fine, and the roar of whose waters can be heard at a distance of 2 miles. Two marches from Tongue brought Mr. New and his party to the south-western foot of the Usambara Hills, the Ruvu, as the river is here called, being very near on the left. Beyond this the river splits

up into many parts, forming a kind of irregular chain-work, a number of small islands being the result, upon which the Wasegua have built their villages, thus securing themselves against the attacks of the Masai, who, bold as they are, hesitate to pursue their prey across deep water.

The Wasegua are a numerous, interesting, and well-to-do people, following both pastoral and agricultural pursuits. They occupy the district lying between the coast people and the Ruvu on the one hand, and the Wasagara and Wanugú on the other.

The sixth stage from Tongue found the party at Makuyuni, where they halted, in order to send messengers to Samboja and Kimweri, and to inform them of their desire to meet them, Samboja informing them the third day after that he would meet them at Mombo, about midway between Vuga and his own residence, for palaver, which arrangement they complied with, and found Samboja seated outside a poorly stockaded village, beneath a large tamarind tree, and surrounded by 300 of the wildest-looking fellows, each armed with a flint musket, and most with a sword of some sort. On learning the errand of the expedition, Samboja informed Mr. New that he could not go to Vuga, that he could not see Kimweri, his son; but was to follow him to Masinde, which he did.

The way to Vuga from Masinde was in a backward course S.E., and the march between the two places turned out to be a very hard day's work. Midway between the places the mountain's side was faced, and the ascent began. It was extremely stiff climbing, and for the men and their loads it was cruel work. Up, up, up, and then down and up for three hours, Vuga was at length approached. Vuga is built upon the very top of a rounded peak, some 4700 feet, by aneroid barometer, above the level of the sea. Valleys drop down to great depths on all sides of it, and it can only be reached by the steepest acclivities. The prospect it commands is very fine. There are mountain peaks, the loftiest of which cannot be less than 7000 feet above the sea level, presenting every variety of shape, ridges upon ridges rising one above another till lost in the skies, rocks and crags, and "threatening steeps" *ad infinitum*, enormous valleys, gloomy ravines, and glens as romantic as Glencoe; also dark majestic forests, compact woods, wildernesses of brown jungle, expanses of tall, waving grass, beautiful slopes of short, green turf, and everywhere patches of cultivated land, fresh and verdant as an Eden; brooks, and streams, and torrents trickle and murmur, tumble and splash, and roar on all sides.

Among the picturesque beauties of the neighbourhood of Usambara, is a lake to the north-west of Masinde, which, according to the natives, is about 9 miles in length and one-third or less in breadth. It is called Mangu. It derives its waters from the north-western portion of the Usambara Mountains, and sends off its surplus by the Mkomazi into the Ruvu.

The soil in the neighbourhood of Vuga is a deep red, and the rocks are granite and quartzose. But the stream, taking its course round the north side of Vuga, flows over beds of sandstone. Coal is said to have been sent from Usambara to Zanzibar; but, although Mr. New tried hard, he did not succeed in obtaining a specimen. The soil is evidently very fertile, and from the constant accumulation of clouds and frequent rains never suffers from drought. Almost anything can be raised here. At present plantains and Indian corn are the staple articles cultivated and consumed by the Wasambara.

The climate during the stay of the expedition at Vuga, with the exception now and then of a few hours at mid-day, was delightfully cool, the temperature being below the malaria-generating point; so that in the opinion of Mr. New, the country presents all the advantages of a sanatarium to the future civilizers of East Africa.

The population of Usambara is not large, and appears to be becoming less and less. The country is in a far less flourishing state in this respect than it was at the time of Dr. Krapf's visit. This is owing to the intestine feuds which have rent the people into factions ever since the death of Kimweri the Great. The present people of Usambara may be said to comprise three distinct races: the Wakilinde, who are the ruling section; the Wambugu, who look more like naturalized subjects from other parts; and the Wasambara themselves, who are the aborigines.

After a stay of more than a week at Vuga, during which time Mr. New was treated with the most generous hospitality by the young king, Kimweri, whose chief request was that he would obtain for him a score of cannon and a number of men to make gunpowder for him, he took leave of the place, cutting across mountains in a north-easterly direction, passing up fine valleys more than 4000 feet above the level of the sea, ascending ridges and peaks more than 6000 feet in height, and descending to the plain on the northern side of the block.

Their way now ran in a somewhat out-of-the-way course, at first towards Buiti, in the country of the Wasegeju, then to a direct line through the low lands of Wadigo to Mombasa, which they reached in forty-five days after their departure from Zanzibar.

Colonel GRANT said he knew Mr. New personally, and was sure the Society would miss very much the admirable remarks that he was accustomed to send home. He was the only person who had ever ascended as far as the perpetual snows on Kilima-Njaro, and his recent journey was a very interesting one, as it showed that there was a very fertile region in that part of Africa, and that there was a great field for the missionaries. He hoped that some one would be found to succeed him who would be able to do as much as Mr. New had in the way of extending geographical knowledge. Mr. Wakefield, who was still at Mombas, was also a great geographer. He had been longer in the country than Mr. New, and was better acquainted with the languages. He, too, had on several occasions sent home accounts of routes that he had learned from natives who had been far to the westward; and these routes had been published in the *Journal* of the Society, forming very valuable additions to the geographical knowledge of that part of the world.

The PRESIDENT said the route that Mr. New followed from the coast to Vuga, the chief town of Usambara, was very much the same as that followed by Burton and Speke in 1857; but the return route to Mombas was through an entirely new country. Mr. New's loss was a very great one, not only to geography, but to the Missionary Society of which he was so distinguished a member. He was known to have done the greatest good in the cause of Christianity and education among the natives, and his career promised to be most useful in the future.

COLONEL GORDON'S EXPEDITION.

The third paper was a "Report on the Nile above Gondokoro, between Regiaf and Dufli," by J. Kemp, of the Egyptian Expedition under Colonel Gordon.

The Regiaf to Kya River was 42 miles, the country being open, rocky, and undulating, intersected by many mountain streams. It was thickly populated by the Bari tribe, who cultivated it to a large extent, and owned little herds of cattle, which they objected to sell. The first cataract was 12 miles from Regiaf, whilst the second one was seen at the mouth of the Kya River, which river was a good size, flowing from the west. The Arabs and natives said that its rise took place in the Kuku Mountains; its width was from 70 to 80 yards. In the dry season its depth was from 3 to 4 feet, and in the rainy season, in parts, from 10 to 12 feet. Five miles from where it joined the Nile was a fall 50 or 60 feet high. Up to this point the bed was very rocky and the banks steep, being covered with large rocks. Beyond that the country got flat, but the river, as far as was able to be seen, was still rocky. After leaving the Kya River the country was much the same as on the

north of it, but more undulating and rocky, and with fewer streams. Forty miles from Kya they came to Mount Labori, on the east bank. Twenty miles further on another range of hills shelved down to the Nile on the east bank. On the west side the Kuku hills, which had been drawing nearer to the river, were now parallel with and only a few miles distant from it. From this point the mountains on both sides of the river run parallel with it to the head of the cataracts, a distance of about 30 miles. The range on the east bank ran straight down to the river; that on the west was separated from it by a narrow strip of land, covered with high grass and prickly trees, very rocky, uninhabited, and uncultivated. The natives stated that there was only one path. At Dufli the hills on both banks dropped abruptly. From the first view of the Nile on coming out of the grass, there was little doubt that the cataracts were passed. As far as one could see there extended a flat, barren-looking country, covered with palms and a few other large trees.

The PRESIDENT added that Mr. Kemp had been engaged in superintending the conveyance of sections of two vessels past these obstructions, and in putting them together at Dufli, whence it was supposed the river would be navigable up to its outlet from Albert Nyanza. The latest intelligence from Colonel Gordon was, unfortunately, not so encouraging as that received in January last. Mr. Kemp had fallen ill, and was preparing to leave for Cairo. Mr. Linant, who had been preparing to visit King Mtesa, by way of the Somerset Nile, in a steamer, was also invalided. The young engineer officers, Messrs. Watson and Chippendale, were also both ill, and had been obliged to descend from Regiaf to Colonel Gordon's head-quarters, at Lardo; happily, at the latest dates, they were both reported better. These untoward events had delayed the projected expedition to Albert Nyanza, and Colonel Gordon considered that there would be a risk of further illness to the young officers in such a journey, as he believed the country between Ibrahimeya and the lake was marshy. But the Society might be quite sure, from what it knew of Colonel Gordon's character, that he would not give in unless he was absolutely compelled to do so; and it appeared, from a letter from his brother to Colonel Grant, that if other means failed, he was determined to go himself and launch his boat upon the lake. He had been joined by Mr. Marno, of the Vienna Geographical Society, who knows the country well, and was going to the western side of Lake Albert Nyanza. Mr. Marno was an experienced African traveller, so that his co-operation with Colonel Gordon would be very valuable. An African exploring expedition was on the point of starting from Italy, intending to proceed to Shoa, thence through the Galla country, and past Mount Kenia, towards the Victoria Nyanza. It was an exceedingly difficult line of country, but the promoters of the expedition were very confident of success. Within the last week an offer had been received from a German gentleman attached to one of the Egyptian expeditions to Dafur, to communicate to the Royal Geographical Society such information as he could obtain on the route. The prospects of geography in Africa were, therefore, very encouraging, so many different exploratory parties all converging upon the great Lake region.

Colonel GRANT said no previous traveller had been up the side of the river which Mr. Kemp had visited; and the discovery of a new river upon the left bank was a fresh addition to the geographical knowledge of the country. Colonel Gordon, in his last letter to him, mentioned that he had met with great difficulty in getting the sections of his boat up to the west of the river above the cataracts. The natives would not sell any of their cattle, nor assist in conveying the boat up the river. He had, however, organised a corps of coolies for the purpose, and, with their assistance, hoped that Mr. Chippendale would be exploring the Albert Nyanza within the next six months. Several deaths had occurred in his camp; and he himself, with his assistants, Mr. Watson and Mr. Chippendale, were all suffering severely from fever and dysentery. It was reported that Mr. Watson was coming home. He had the utmost confidence in Colonel Gordon, and had no doubt that he would succeed in his undertaking if his health was spared.

In answer to a question,

The PRESIDENT said the latest news from Cameron was dated May 19th, 1874. The Sultan of Zanzibar had withdrawn his protection of Unanyembe, and the native chiefs, Mirambo and his friends, were now paramount. Whether that would facilitate or obstruct the traffic between the coast and Tanganyika remained to be seen. Some people were of opinion that the change would be rather advantageous than otherwise.

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AMERICAN GEOGRAPHICAL SOCIETY.

CHIEF JUSTICE DALY delivered his annual address to the Society on the 25th of February last. He passed in review the chief geographical events of the year, and noticed in somewhat more detail the various surveying and exploring expeditions which had been at work in the United States during the same period. These last comprise the labours of the Engineer Corps, the Coast Survey, and the Hydrographic Office. Among the first may be mentioned Lieutenant Wheeler's Survey west of the 100th meridian, which during the year covered 75,000 square miles. These extended over the "Colorado plateau" which from its steppe-like table-land, its gorges and cañons is of great interest to the geologist. Every state and territory west of the plains is crowded with the products of volcanic action, ancient and modern, these being especially noticeable in Arizona, New Mexico and Utah. The country in the vicinity of the cañons is of great beauty, and the dwellings of the former inhabitants (probably Aztecs) are of considerable interest, being built evidently with a view to security against attack, on the sides of the cañons or on projecting ledges, rocky elevations, or other places from whence a signal might be seen at a distance. Besides Lieutenant Wheeler, Major Barlow, Lieutenant Ruffner and Captain Jones had been conducting explorations. The latter officer has explored an excessively mountainous area in the north-west corner of the Wyoming, about the head-waters of the Yellowstone and other rivers. Captain Ludlow accompanied Colonel Custer's military expedition to the Black Hills, which were found to abound in timber, pasture and grass, to be wonderful fertile and of a genial climate, and altogether admirably adapted for settlement. Professor Hayden and Mr. J. T. Gardner's geological and geographical survey is noticed in an article by Mr. Southworth in our present number, but a description of one of the ruined dwellings found by the survey in a cañon of the Rio Mancos, a branch of the San Juan, quoted by Justice Daly, deserves mention here. The house was a two-storied one, built of smooth-faced stones, laid in mud mortar, with well-constructed windows, that were formerly glazed with mica. The whole structure showed not only skill but taste, the interior being plastered and the walls panelled in red with a white border. It is built on the shelf of a precipice, about 600 feet above the bed of the river, so as to be secure from the attacks of predatory and warlike tribes to the east and south. The ruins of a fortified city were also discovered to the west of the cañon, the walls being built of stone, and 15 feet in thickness.

Passing on to the doings of other countries, Justice Daly makes some important remarks with reference to M. Pinart's geographical and ethnological investigations in Alaska and the Aleutian Islands. This work, as our readers may remember, gained for him the gold medal of the French Geographical Society. The Chief Justice remarks—"Of his geographical labours or knowledge I cannot say much in commendation. He

has claimed as his discoveries and given names to places already existing upon Russian maps, and which are found upon our own charts in 1846, and the archipelago which he has named after the statesman Thiers, excepting what was already known, does not exist.* His ethnological researches are entitled to more consideration." In noticing M. Pinart's work, reference is also made to Mr. Dall's more recent labours, which, during the past year, were carried along the coast from Cape Spencer to Mount St. Elias, the whole of which has been examined, and many grave errors detected. The coast was found to extend from 4 to 7 miles further west than as delineated upon the present maps. The region is one of extensive glaciers, which have been examined and mapped for the first time. Twenty-four positions were determined, seventeen manuscript surveys made, and about 12,000 astronomical, magnetic and miscellaneous observations taken. Some curious caves previously explored were re-examined, new shell heaps have been found, and many thousands of ethnological specimens were brought to Washington, where, in McFarland, Kennicut and Dall's collections there is a finer collection of ethnological material relating to the Western Esquimaux than in all other collections of the world put together.

Justice Daly added, that as the Society took a very active part in urging the negotiations on the part of Mr. Seward for the purchase of Alaska, and as there were many who thought a very large sum was being paid for a useless territory, it was gratifying to be able to state that the income now derived by the Government from this territory, after payment of all expenses, is greater than that from any other territory, and will in twenty years extinguish the debt. The southern portion, of Alaska has a comparatively mild climate, and is capable of maintaining a large population. Potatoes, barley, rye, and probably oats can be cultivated, its agricultural resources being about the same as Norway or the Orkney Islands. It is an immense timber region, with great facilities for transportation, and will continue for a long time to supply the products of fur-bearing animals, provided this branch of industry is properly protected.

The remainder of Chief Justice Daly's address dealt with matters which have already been recorded in our columns.

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IMPERIAL RUSSIAN GEOGRAPHICAL SOCIETY.

THIS Society met on the 5th (17th) of March, under the presidency of M. P. Semenof. An obituary notice of M. Timkofsky was read, a member who had recently died at the age of eighty-five, and, who in 1820 and 1821, travelled in China, and had published an account of his travels which even now is considered a standard authority on the country referred to.

The SECRETARY, M. WILSON, then read his monthly report, in the course of which he announced that, on the recommendation of their august President, the Emperor had sanctioned a grant of 10,000 roubles to the Society, towards the expenses of the Russian department at the approaching Paris Geographical Congress. The Committee appointed to consider the scheme for the projection of various lines of levels in Siberia, had nearly completed their report. Among recent accessions to the library were mentioned the last volume of M. Middendorf's great work on his Siberian voyage, and a map of Australia prepared by Baron Kaulbars.

M. BARBOT DE MARNY gave an account of his geological researches last year in the basin of the Amu Daria. The delta is chiefly composed of a grey clay, while on the right bank calcareous formations extend as far as the Bokharian frontier, the same being perceptible on the slopes of the Sheik Jheli range, which consists chiefly of schists, marble, gneiss, and granite. Deposits of grey clay are also found in the Khivan oasis. From the Amu Daria to the Kizil Kum Desert which M. Barbot de Marny traversed from Petro Alexandrovsk to Samarkand, there is no trace of marine deposits or of water in any form having existed there in any recent geological age. The hills in this desert are formed chiefly of schist and chalk, volcanic action being rarely traceable. All the mountain chains must be considered as belonging to the great Tien-Shan range.

After the election of some new members, the meeting concluded.

* This reminds us of the old criticism—"We have found much that is true and much that is new in this work; but what is true is not new, and what is new is not true."

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FRENCH GEOGRAPHICAL SOCIETY.

Bulletin for January.

THIS number contains an interesting notice of the Abbé Armand David, and of his journeys in China and Mongolia, more particularly with reference to his journey in 1866 from Peking eastward to the Alachan country, the first portion of which is given here, and illustrated by a route-map. We propose to give our readers a summary of this journey on receipt of the concluding account. Other articles are, a dissertation on an international meridian of longitude, by M. Otto Struve, director of the Pulkhova Observatory, urging the adoption of Greenwich; an essay on Poncet's and other French travellers' explorations in the regions of the Upper Nile; a letter explanatory of a geological map of France, lately presented to the Society; some communications from M. Duveyrier on the subject of his levelling and surveying operations in Algeria; and the Address, delivered by the President at the annual opening meeting of the Society on the 16th of December 1874, as well as the proceedings at two subsequent meetings.

We regret to say that the *Bulletin* for February has not reached us at the time of going to press.

Bulletin for March 1875.

THE first article in this bulletin is a geographical memoir of Herzegovina, a province of European Turkey, and this is followed by some notes on British Burma and on the Shans and Kakhyen tribes of Burma Proper, by Count Marescalchi. A French missionary contributes an interesting account of the province of Thankhoa, in Tong-King, from which we gather that it is shut in by mountains on the north, west, and south, is well watered by nature, and boasts of a population of about 1,200,000, of which about 15,000 are Roman Catholics. Rice, cotton, sugar, tea, maize and the betel-nut all thrive, but agriculture is not so favoured as the utilization of timber, some valuable kinds of trees, such as ironwood, being plentiful. All the fruit-trees met with in Tong-King abound here, as does also cinnamon, the monopoly of which, on account of its great value as a tonic, and in cases of ophthalmia, is vested in the hands of the king, severe penalties being enacted against any one breaking off the smallest branch. Nevertheless, its value is so high, fetching, as it does, sometimes 100 francs per ounce, that a deal of contraband traffic in it goes on. A good trade is done in ivory by the Chinese resident in Thank-hoa, and along the coast fishing is actively pursued, while at Cua-bang the story goes that pearls of great value were formerly to be found. From December to March the same seaport is visited by shoals of whales, which are the object of superstitious veneration on the part of the natives, who have erected a handsome pagoda on the bank in their honour, and who inter them with solemn funeral rites, in case a dead one is washed ashore. One of the most remarkable sights is the remains of the fortress of Tay-Giai, in the north-west of the province. It was built

about 400 years ago, but abandoned a few years after its completion under the idea that it had brought misfortune. It is a square, encircled by lofty walls composed of solid stone blocks, each side being furnished with an entrance paved with marble. Many of the stones have been taken away by the inhabitants, but it is still an imposing structure, and unique in its way, all other edifices being invariably of brick.

TONG-KING.

Dr. HARMAND contributes a short account of Tong-King in which he dwells upon its advantages as a sanatorium and refuge for French colonists from the unhealthy climate of Saigon, and points out that the climate of Tong-King is especially favourable to the growth of coffee. The interior ranges of mountains are visible from the delta of the Song-koi, and Dr. Harmand imagines that they extend to the borders of Tibet. Zinc, copper, and silver mines are there to be found, according to native accounts, and coal exists to the north of Bac-ninh. The Song-koi flows along a narrow valley, and after passing through countries which are wholly unknown to Europeans, and a belt of forests about 80 miles in width, flows by the port of Hanoi, after receiving two large affluents. The Song-koi has a tawny colour, which gives it the name of Red River. It is subject to great variations of level, its highest period being in July, when it inundates the surrounding country and flows with a powerful current, and the lowest between November and March. Flat-bottomed boats will probably be required for navigation, and the mouths and approaches are now being carefully surveyed. On their first visit the French travellers were struck with the density of the population, the fertility of the country, which appears here to be a succession of rice-fields, and the absence of junks, boats, or any sign of commercial activity. This is probably due to the fact that the country grows only sufficient for its requirements, as it is heavily taxed to make up for the sterility of the rest of the Annam empire. Vegetables are largely cultivated, but the French anticipate growing colonial products of a more remunerative character. Besides the numerous water-ways, there are also causeways built above the level of the inundations, and bridges leading from one road to another.

The inhabitants differ but slightly from the Annamites of the south. They are a mild and inoffensive race, and are not as a rule solicitous of any particular form of rule, though they dislike the Hue government, and recall with pleasure the rule of the Le dynasty, when Tong-King was independent. The mandarins are of course strenuously hostile to all Europeans, and to Frenchmen particularly. They are illiberal, cunning, ignorant, and prone to intrigue and exactions. Few would imagine the pitch to which the last are carried. The soldier cannot ask a favour of his superior officer, the pupil of his master, or the peasant of the chief of the village, without a present in his hands. The administration of each province is centralized, each individual's liberty of action being strictly defined and restrained, while the rights of the commonwealth are most extensive. All the grades of office are filled by competition, the highest being the viceroy, after which comes the *bo-chinh*, or official charged with the duty of collecting taxes, maintaining roads, causeways, bridges, and the like, as well as looking after military matters and such statistics as exist. The *ansat* is the minister and administrator of justice, the framer of laws and regulations. This post is generally filled by a person of intelligence and education, who is often the real head of the Government. Lastly, the *doc-hoc* is the minister of education and government examinations. All the departments are congregated within a citadel adjoining the chief town of each province. These citadels are built on Vauban's principles (which were introduced by a French mission sent out in 1786 by Louis XIV.), and furnished with some ramshackle artillery. The garrisons are numerous but ill-drilled; they are armed with long lances, and some of them have some good flint-lock muskets of St. Etienne manufacture. Besides the regular army, there is a sort of *landwehr*, a force made up by each village contributing a contingent, on being called upon to do so by the mandarins. This service, however, is one of great hardship, as the soldiers receive nothing beyond a few measures of rice, while they have to provide all their equipment, in addition to the usual assortment of presents for every grade of official.

The people gain their livelihood mainly by cultivation, but some practice fishing, pottery-making, and brick-making, the soil being particularly suited for this last industry. Unfortunately, fuel is scarce, Lower Tong-King being poor in trees. Workers in mother-o'-pearl also make a good living, and turn out some very artistic productions. Boats are generally constructed, owing to the dearth of wood, out of strips of bamboo, ingeniously interlaced and smeared over with oil of the dipterocarpus, which comes from Upper Tong-King.

The Chinese generally live in the larger towns where they have decided influence, and engage in commercial pursuits, the avocation of money-lenders being particularly affected by them. Commerce with China is confined to articles of apparel, fancy goods, and drugs. The mountains are inhabited by a variety of savage races, more or less unknown, but who are, doubtless, the aborigines of the country. In the north-west and north there are numerous hordes of banditti, chiefly Chinese, who live by plundering the unfortunate inhabitants and compel them to keep constant guard along the roads and approaches to the towns, which are further protected by palisades and ditches.

Dr. HARMAND concludes his sketch with a vigorous vindication of the memory of Francis Garnier, whom some have falsely accused of greediness and of ambition. The latter quality Garnier certainly possessed, but it was an honest and loyal ambition which it would be well for France if more of her sons possessed.

A letter of Dr. Bessels follows, in which he enumerates the chief scientific results of the 'Polaris' Arctic Expedition, among which the magnetic observations were the most important. Eight sorts of mammals and twenty-three birds were met with, but these collections were unfortunately lost. Dr. Bessels also says that it was impossible for the expedition to have attained a higher latitude in the condition they were in, as the ship had become leaky aft, and quite unfitted for a further exploration.

A review of a new work by M. Gravier on the discovery of America by the Northmen follows. It is pronounced by M. Malte-Brun to be altogether of great interest.

The last article of note in this month's *Bulletin* is a series of letters from M. Duveyrier, who is accompanying Captain Roudaire's levelling expedition in Algeria.

NOTICE.

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